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Rhodesian Man and the Evolution of the Hominid Brain

By F. J. IRSIGLER*

The essence of society is repression of the individual.
Norman O. Brown, *Life Against Death*

THE BASAL NEOCORTEX: ANATOMY AND CLINICAL SYMPTOMATOLOGY

In 1892, A. Pick published an article in the *Prager Medizinische Wochenschrift* in which he described a rare type of brain atrophy associated with dementia that was later called after him. He could hardly foresee that he had touched upon a subject which was soon to become the starting point of a new branch of brain research.

The clinical picture was one of progressive mental blunting affecting people in the middle age group (the youngest case so far reported is 21). The onset is insidious, the course slow and relentless, ending in complete decortication and depersonalisation. However, it was not only the clinical picture that was so intriguing but also the sharp delineation and the distribution of the pathological process as revealed by post-mortem studies. They showed a striking shrinkage of certain brain convolutions with a corresponding widening of the sulci giving the brain a kind of walnut appearance.

Already Pick had noticed that as a rule the morbid process was confined to so-called association areas of Flechsig, including those parts of the frontal and temporal lobes adjacent to the anterior or orbital and middle cranial fossae of the base of the skull. What is usually spared is the greater part of the insula (of Reili), buried in the Sylvian fissure, and the auditory convolutions of Heschl, the posterior two-thirds of the superior temporal gyrus, the central convolutions of Rolando and the greater part of the parietal convexity; also resistant is, according to Spatz, the whole of the occipital lobe whereas the limbic area (also called "rhinencephalon" or "olfactory brain") including the hippocampus, may be severely involved together with the temporal pole and its immediate surroundings. The foci of predilection in Pick's disease turned out to be the fronto-basal convolutions, the temporal pole and those parts of the temporal lobe including and adjacent to the ancient rhinencephalon with its limbic extension.

* Extended version of a paper read at the Jubilee Congress of the Medical Association of South Africa, Johannesburg, 12-18 July 1975.

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These peculiar features set the condition apart from other types of systemic and vascular, especially arteriosclerotic, atrophy of the brain. It follows that Pick's dementia is to be considered a nosological entity in its own right, from both the anatomical and clinical points of view.

Since Alzheimer's first histological account in 1911 it has been accepted that the degeneration and loss of nerve cells is most prominent in the outer three layers of the cortex which, according to F. Nissl, are least affected and most independent of vascular isolation. This highly selective damage to the cortical neurons was confirmed by Critchley in 1933, and later by G. Peters and W. Mayer-Gross. A first clue that a genetic factor was involved at an early stage of development came from the work of Grünthal in 1930-31. It suggested a dominant autosomal transmission of the disorder. In addition to this kind of inheritance, Sjögren in 1952 drew attention to the peculiar geographic distribution so far as Sweden was concerned.

An important break-through linking phylogeny with ontogentic development is due to the pioneering work of H. Spatz and his school (1937-66), at first in the Brain Research Institute in Berlin-Buch and later in Giessen and Frankfurt am Maine (Kahle). Spatz made the concept of *heterochrony* the starting point and leading idea of his and his pupils' research. Heterochrony means certain shifts in the time scale of occurrence and in the rates of subsequent development taking place in a sequence of inter-related genetically determined stages. Since phylogeny is nothing else than a sequence of modified ontogenies (G. R. de Beer) and since modification of ontogeny comes about by shifts in the time of first appearance and in different rates of development, that is by heterochrony, the latter is the natural link between evolution and ontogenetic development.

When applied to the evolution and development of the hominid brain heterochrony gives rise to the concept of *morphokinesis.* The differential growth rates of the parts of the brain surrounding the Sylvian fissure result in rotation of the cerebral hemisphere around the Sylvian "pivot," and simultaneous translational shifts cause the fast-growing parts to overlap others that become dislodged away from the surface and thus loose contact with the bony brain case becoming, as it were, buried or "suppressed"; this is typically the case with the allocortex of the limbric system and the insula. In morphokinesis, suppression goes hand in glove with promination. Clearly, this is equivalent to saying that the most recent parts of the brain, from the point of view of ontogeny and phylogeny, become eventually those most prominent on the brain surface, that is, they become the convolutions that lie against the bony walls to make there

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the so-called digitate impressions, especially in those places where the intervening dura matter is thin as it is the case over the base of the skull. Conversely, in between these impressions the bone is raised to form sharp ridges, called juga cerebralia. They correspond to the sulci between the convolutions. In this way, the inner relief of the osseous brain case becomes a kind of template representing those parts of the cortex that are the latest to make their appearance on the phylogenetic time scale as well as during individual development.

The gradient of progressing maturation of the most recent isocortex (the counterpart to the ancient allocortex) is arranged concentrically around the Sylvian fissure and advances from there in the fronto-basal direction (Kahle). This results in a shrinkage of the allocortex (subdivided into archicortex and palaeocortex) from the convexity to a small area on the under surface of the brain where a primordial fissure, called fissure rhinalis, marks the boundary between the " olfactory " allocortex and the basal neocortex. Spatz has confirmed the earlier finding by Retzius (1896) that the basal neocortex is the latest to form sulci that define the familiar convolutional pattern of the brain surface. It is also the latest to reveal laminar stratification, the characteristic feature of the isocortex when viewed under the miscroscope. And the maturation of the neurons goes hand in hand with the deposition of myelin around the axis cylinders, the so-called myelogenesis. It will be clear from the foregoing that the area of the basal neocortex representing the most " humanised " part of the hominid brain is roughly coextensive with the anatomical distribution of the fronto-temporal atrophy as encountered in the more typical cases of Pick's presenile dementia.

The pathogenetic implication is obvious. This type of cortical atrophy is bound to wipe out what Spatz has called " the core of humanity ", that is, human character and personality. Once the clinico-pathological interrelationship was established a wealth of observations was amassed, mostly from bullet wounds and war injuries of the brain confirming and refining the basic concept. As one would expect, the correlation turned out to be the more convincing the more, and as long as, the pathological process was confined to the basal neocortex proper and its hypothalamolimbic extensions.

In the clinical symptomatology of Pick's dementia two main trends can be distinguished; they may, in the course of the disease, overlap and/or alternate. We find, on the one hand, a loss of drive and initiative sometimes sufficient to make the patient mute, with staring eyes, and a striking lack of urge to move, but without that " cog-wheel " rigidity so typical of

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Parkinson's syndrome. The picture is often combined with emotional blunting and lethargic apathy. On the other hand, one comes across an equally striking antisocial behaviour due to a loss of restraint, with episodes of compulsive laughing or crying, and with a kind of empty euphoria and jocular garrulousness (W. Mayer-Gross). The disintegration of human character is disclosed in the lack of insight both for their own shortcomings and in relation to the surroundings, and in a loss of social instincts and higher ethical values and concepts. "Many patients," says Mayer-Gross, "indulge in bouts of alcoholism, sexual adventures, and theft, and end up in conflicts with the police and the court." Defects of speech are uncommon or a late development, and this is consistent with Broca's and related speech areas being spared, as a rule, by the atrophising process.

Pick's atrophy was the first indication of the fact that there are two distinct types of syndrome correlated with lesions of the frontal lobes. Whereas damage to the basal under surface of the forebrain, especially to the orbital convolutions, personality changes of the kind described are in the foreground, damage to the convexity including the frontal poles is likely to result in disorders of drive. Though L. Welt had reported personality and character deviations following injuries to the fronto-orbital neocortex as early as 1888 there is still a tendency, especially in literature on psychosomatics and cultural evolution, to correlate the forebrain as a single whole with all kinds of intellectual, psychosocial, and cultural achievement. Chester S. Chard, for instance, in his great work on prehistoric man (1969) states that "the large frontal area of our cortex is involved in foresight, planning, and initiative—all these things reflecting cultural activities and complex social life." Chard also shares the erroneous view that the accelerated development of the frontal lobes in man is responsible for emotional and instinctive impulses being "effectively subordinated to the good of the community as a whole." Similarly, Ernest Gardner, in his *Fundamentals of Neurology* (1963) maintains that "Human behaviour is related to neurological structure and function just as is its counterpart in lower forms. Its infinite complexity is correlated with increasing development of the forebrain, particularly the cerebral cortex. Here reside the mechanisms governing language formation and use, emotional reactions and intelligence." We shall see in the following section that the correlation is not as simple as this and therefore cannot be described in the mechanical terms of subordination.

The important division of the frontal lobes into at least two distinct functional units is due to K. Kleist's thorough-going analysis of the late sequelae of all kinds of war injuries during

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the 1914-18 war. The clinical aspects and their correlation with anatomical findings were worked out in great detail by E. Grünthal and H. Spatz between the two wars.

E. Kretschmer has coined the term "Basalsyndrome" to delineate the sum-total of mental derangements due to localised traumatic lesions of the so-called "Orbitalhirn," that is the frontal sub-division of what is now known as the basal neocortex. Finally, H. Heygster* has dealt with traumatic lesions and their sequelae involving the frontal lobes in two important monographs (Spatz 1962). He based his conclusions in detailed observations of 242 bullet wounds sustained during the second world war. He found the classical "Orbitalhirnsyndrom" in 60 per cent unilateral, and in 91 per cent of bilateral frontal lobe lesions. Two fundamental facts were established:

(1) The human forebrain (sometimes vaguely called "prefrontal cortex") falls into two separate functional units, each with its own clinical and psychopathological characters as described above.

(2) The basal neocortex must be considered the most recent and, consequently, the most "humanised" part of man's brain. Spatz believes that the basal neocortex is undergoing a progressive evolutionary change of the adaptive type, probably at an accelerated pace.

To sum up: The phenomenon of heterochrony when applied to the study of morphokinesis of the brain reveals that the bony relief of the anterior and middle cranial fossae of the base of the skull is moulded by the convolutional pattern of that part of the brain cortex, called basal necortex which is the latest to emerge in the evolution of the primates as well as in the ontogenesis of the human brain. This clearly offers an opportunity to reconstruct, from fossil endocranial casts, the extent and rate of humanisation achieved at successive stages in the phylogeny of the hominid brain. At the same time, the basal neocortex coincides roughly with the fronto-temporal areas undergoing profound and progressive atrophy in the more typical cases of Pick's disease. This explains that in this condition the truly human traits suffer early and irrevocable damage.

HUMANISATION

It is, specifically, the orienting conscious function of the organism that provides us—though only through the mirror image of thought —with insights into the biological adaptive processes. The physiological explanation of this lies most probably in that within

*Hans Heygster was Professor of Psychiatry and Neurology at the University of Rostock and at the Airlangga University of Surabaya, Indonesia. He died there of tropical dysentery in 1961 at the age of 55.

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the central organ cell complexes become vitally active that possess a specific degree of adaptability. They are the very same complexes which phylogenetically are the latest to develop. Last not least the conservation of this primordial capacity to react explains above all the unfolding of the human brain and hence humanisation in general.

E. G. Kolbenheyer, *Goethes Denkprinzipien und der biologische Naturalismus,* Festansprache, Frankfurt am Main, 1937.

Rhodesian Man, like the classic (European) Neanderthal, represents an important landmark in the process of humanisation. This is true whatever the absolute dating of the Broken Hill and the related Saldanha skull may be. Previous estimates of the geological antiquity of Rhodesian Man by R. Ruggles Gates (1948), J. Desmond Clark (1960), Carleton S. Coon (1962), and W. W. Howells (1966) assigned the "sub-Saharan Neanderthal" hardly more than 25,000 years before present. Richard K. Klein (1973), basing his arguments on the radiocarbon chronology of the southern African Stone Age by J. C. Vogel and P. B. Beaumont (1972), and on artefactual and faunal evidence, places Rhodesian Man within the later part of the Middle Pleistocene, more than 125,000 years ago. On morphological grounds, Rhodesian Man may be classified either as late *Homo erectus* or archaic *Homo sapiens.*

There is no need, in the present context, to take part in the Rhodesian-Neanderthal controversy (W. W. Howells). The cranial capacity of the Broken Hill skull, now generally accepted to be 1280 c.c., places its possessor within the *sapiens* range.

Following the pattern of gradual humanisation of the vertebrate brain—as we shall now do—in broad outline and from the point of view of evolutionary genetics we come upon a striking feature, revealed only recently, that may give us an important clue in our attempt to understand how man has become what he is now. The concept of rhinencephalon or olfactory brain (as mentioned earlier) has become somewhat outdated since it was realised, from comparative phylogeny of the brain, that, from the reptilian stage onwards, the rhinencephalon enters into important links with the neuroendocrine centres of the hypothalamus (in the walls of the third ventricle) on the one hand, and, within the mammalian acestry, with the neocortex. Out of this sprang, supported by clinical and experimental evidence, the modern concept of the limbic* or visceral brain

* The term "le grand lobe limbique" is due to the French anatomist P. Broca (1878) regarded as the father of physical anthropology. The limbic lobe (from limbus—hem or fringe) encircles the brain stem and forms, as it were, the "core" of the vertebrate brain. It covers, in man, a part of the interhemispheric aspect as well as of the under surface of the brain. The latter is called the hippocampal gyrus or archi- and palaeocortex.

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(P. D. McLean). It comprises functionally all facets of emotional (affective) and pshychological behaviour. Both features make the limbic system the most archaic and deep-rooted representation of what, in man, can be sub-summed under the term of "personality" as expressed in behaviour traits towards the inner world of instincts and impulses, and the outside world, called the environment. The remarkable fact to be noticed here is that the emergence of the hypothalamo-hippocampal system coincides with the completion of the degree of genetic redundancy as achieved by polyploidisation* during the preceding fish and amphibian stages (Ohno 1970). Thereafter the required redundancy was maintained by unequal crossing-over and unequal exchange as well as by evolution of short, repetitive DNA base sequences.

This process is under the control of the hierachic organisation of the genetic system (A. Lima-de-Faria 1973) as part of the chromosome phenotype. It favours the unrestricted accumulation of mutations that are neutral in relation to the environment and therefore escape from the pressure of natural selection. The presence of untranscribable (heterochromatinised) segments in the genome explains why evolution could occur throughout mammalian ancestry without increase in the absolute genome size, that is, the DNA content. The latter has remained constant in the Synapsida lineage since the late Carboniferous, and including the monotremes, the marsupials, and the placentals (Ohno 1970).

The far-reaching consequences of this unique piece of evolutionary genetics came to be realised only after a more penetrating understanding of the functions of the limbic cortex had been obtained, especially with regard to the socio-familial and socio-cultural aspects of behaviour. This eventually paved the way for approaching, by neurophysiological methods, such important problems as aggressive destruction and what is called by some sociologists "psycho-social disease."

What is evident in these complex behaviour patterns is the fact that they are guided and oriented towards the individual as a member of a community. In "states" such as anxiety, rage, frustration and the like, the individual pattern and character finds its release as well as its consummation. This implies that their central representation must be in a "diffuse" state mediated by chemical messengers present at the required threshold concentrations. Once these concentrations are attained

* "Polyploid" is an individual having three (triploid), or more complete sets of chromosomes instead of the usual two as in the Diploid (Winkler 1916).

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the behavioural pattern is " triggered off " as an integrated whole —not unlike the " behaviour " of an exposed photographic plate put into the developer (E. and B. Scharrer).

For this kind of control, K. Pribram (1971) has coined the descriptive term " distributed state." In it, information is not pin-pointed as in the Cartesian frame of somatic control, but " spread out " over the whole target area. What we have here is a relation among occurrences, adjacent in space and time, thus a system of balancing or equilibrating, contiguous activities. It is exactly this type of equilibration, facilitatory and inhibitory in the classical sense, that is characteristic of the neocortical interference with the aggressive and sexual drives of the limbic system. It gave the proto-hominids the ultimate lead and launched them into the hominid evolution proper (Chance 1962, Fox 1967).

When discussing the distributed state, K. H. Pribram refers, in his 39th James Arthur Lecture on the evolution of the human brain, to what he calls " awareness " as that brain state " resistant to being disrupted by local damages provided this damage is not overly extensive." It is doubtful whether a state of awareness in its own right exists. What we observe is not " awareness " but a continuous flow of behavioural attitudes more or less appropriate to a specific situation in time and place. They include behaviour which is neither conditioned in the Pavlovian nor motivated by recompense and punishment in the Skinnerian fashion. Human beings are not all the time at the crossroads, that is, coerced by their surrounding to choose between alternatives. Human behaviour is, to a considerable proportion, determined by images as has been shown by W. E. Mühlmann (1956) and other cultural anthropologists. Of these images Pribram says: " Although images are evanescent, they occur." How do they arise? They are constructed by a process of encoding which, in its turn, is based on the occurrence of ordered sequences memorized as repetitive events. A code is stored information which, in cybernetic terminology, is " a sequence of measurable occurrences distributed in time." Decoding then means remembering the meaning previously acquired through repetition. Memory is the capacity to evoke evanescent images.

It is through the introduction of these basic concepts of information theory into evolutionary genetics that memory processes have become to be regarded the central event in the emergence and transmission of behavioural traits. A. Marshack (1972) has called it " the time factoring capacity." It is the hallmark of the distributed state and has a symbolizing as well as a cognitive function. For, though it is customary to regard the function of the limbic forebrain as being restricted to " monitoring the world

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within " (Pribram) it is more appropriate to consider the visceral brain as the medium through which the organism exchanges information with the internal as well as the external milieu. The exchange involves coding and decoding.

The cognitive function has been established in detail and on an exact experimental basis by refined electrophysiological methods (neuronography) chiefly due to the schools of Stephen W. Kuffler (since 1953) and R. Granit. According to these views, the primary sense data undergo, through the analysing activity on the part of the organism, a relay of successive destruction as well as re-composition out of (in the case of visual images) the most abstract geometrical archetypes and spatial relationships. Thus the image is both a creation of the perceiving organism and an abstract representation of a set of environmental signals. In addition, not only is the image constructed on a pre-existing (" innate ") grid of reference but it is in itself a construct matching a mental pattern or " structure " in the late eighteenth century Kantian sense. Clearly, this kind of " constructivism " centering around a self-regulating and self-perpetuating quality opposes and supersedes the " classical " positivistic and behaviouristic approach which has been prevailing in science since the late nineteenth century. It is a logical generalisation of the concept of intra-organismic homeostasis to cover the analogue of mutual interplay between the organism and its environs.

It is the cognitive aspect of symbolic representation that gives a clue to the age-old riddle why abstract, e.g. mathematical, symbols created by man enable him to represent " nature " so faithfully though these symbols owe nothing to an ad hoc experience (Monod 1971). For a more detailed discussion the reader is referred to the work and numerous articles by J. Piaget, R. Granit, and by members of the Stephen W. Kuffler team. More general aspects and ramifications are discussed by F. J. Irsigler (1974, 1975).

With the expansion of the neocortex which is the overriding and consistent feature in hominid evolution, the image-constructing operation of the primordial " olfactory " allocortex shifts gradually from the short-term to a long-term range thus gaining a new dimension in time in relation to both the past and the future.

Since the classical experiments by Fritsch and Hitzig in 1870 most parts of the brain cortex accessible to surgery have been explored and mapped for the capacity of image-formation. For obvious reasons these observations concerned the neocortical convexity of the brain. In 1938 H. Klüver and P. C. Bucy removed both temporal lobes in the rhesus monkey thus includ-

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ing a considerable part of the limbic system. They produced a remarkable syndrome that now bears their name. Their analysis of this kind of lobectomy was subsequently supplemented by clinical and neuro-physiological observations. Nowadays the Klüver-Bucy syndrome means a most characteristic oral grasping automatism, also known as the bulldog-phenomenon. It consists of a compulsive orientation of the face and the mouth towards any kind of object available to the individual to be grasped either by the lips or the hands and to be ingested, chewed and if possible swallowed. It can be described as a "vacuum activity" with to-and-fro movements of the head in search for the breast. The phenomenon is akin to the lip-pursing of the mouth ("Schippe") already described by Charles Darwin. The bulldog- or lip-pursing phenomenon is often seen in Pick's disease (G. Pilleri and K. Poeck 1964).

By the fifties an important detail was established which subsequently made it possible to visualize the Klüver-Bucy syndrome within the framework of a whole spectrum of behavioural abnormalities. It turned out that in man the oral righting automatism made its appearance only after removal of or damage to the limbic portions of the temporal lobes; excision confined to the temporal neocortex failed to evoke it (Bailey and co-workers 1953). In addition it was found that the oral grasp mechanism was one aspect of a general type of deviant behaviour, a regress to infantile stereotyped mechanisms such as aggressiveness, hypersexuality and sham rage, and their counterparts: loss of drive to move and to talk the milder forms of the latter being labelled as "placidity." The areas involved are not confined to the hippocampus proper but "spread out" over the whole limbic system including the subcallosal (or parolfactory) gyrus and the "orbital brain" (Poeck 1970). This kind of overlap is consistent with the distributed state of the visceral brain in which one functional unit is instrumental in lieu of the integrated personality and its behaviour in the cognitive and emotional spheres.

Disorders in the area of the distributed state are of far reaching consequences, even in their initial stages, both for the individual and the group. By disorganizing the basic personality and character traits they affect the "core" of humanity and lead to a gradual loss of contact, cognitive, emotional, and moral with the surroundings, animate and inanimate. The morbid process, whatever its pathogenesis may be, sooner or later renders the individual unsuitable as a member of a cohesive, psycho-social and socio-cultural community. Pick's disease is the classic and historically first example. The reason for this remarkable phenomenon resides in the fact that the

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underlying process interferes with both our most ancient, that is, our reptilian heritage, and our most recent, properly human, that is, neocortical patrimony; both are encoded in the Watson-Crick double helix.

The fundamental quality of the distributed state is image formation, the pre-requisite of memory. Indeed, memory is equivalent to image construction, and it serves to orient the living organism in the space-time continuum; it thus directs the behaviour in accordance with past experience. Consequently, loss or misinterpretation of images due to defective coding and/or decoding results in a breakdown of orientation and behaviour. The correlate of the fundamental quality on the evolutionary time table is, as we have seen, the uniformity of the DNA content throughout mammalian and including hominid evolution. Even the expansion of the neocortex operative in the higher mammals meant simply a distribution of the genetic information available at the lowest mammalian level over a tremendously enlarged area, without increase in the genome size.

It would be a mistake to refer to "release phenomena," or to loss of neocortical control over "subordinate" centres. What is disordered in the pathological states here is the homeostatic balance between the world inside and the world outside; this balance is maintained through the medium of images and symbols, including language.

Man, in choosing, modifying, and adapting his environs according to his own needs and pleasures plays, in this respect, the most active part of all living creatures. It is the one or a few outstanding individuals that imprint their indelible mark on the socio-cultural organisation of the group (C. D. Darlington and K. Mather 1961) whose members share a common heritage of symbolic expressions, ideas, socio-cultural rituals, and emotional responses. All of these eventually converge in the behavioural traits characteristic of a genetically and culturally integrated "society." To such extent cultural manifestations are based on learning, that is, on memory, individual and collective, the latter being called tradition.*

However, learning which means adaptive orientation can occur only according to a cognitive frame of reference that is genetically determined right from the start, and, therefore, common and confined to the group concerned. While defining culture as "a nonbiological or superorganic agent" Dobzhansky (1965) states that "human culture is not possible without human genes." This is either sheer truism or a contradiction. It is the

* The English historian Colin McEvedy states plainly: "Language, race, and culture are a single complex."

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specific gene pool of the culturally active group, and not the gene pool of mankind, that determines the mode, tempo, and the degree of culture achieved under the given environmental requirements and opportunities. It is the division into groups and not a common strife for a mystical " human culture " that constitutes the essential element in cultural evolution. Obviously, there are certain common traits, and such as due to diffusion and adjustment between groups that have come into contact; but they do not add up to make what environmental theoreticians are fond of calling " human culture."*

Let us summarise: Humanisation means, in terms of morphokinesis of the hominid brain, expansion of the reptilian olfactory cortex to include successive stages of neocortical elaboration with its own cyto- and chemoarchitectonics. This final evolutionary step was achieved within a uniform framework of DN content by the evolution of highly repetitive, non-transcribable DNA sequences as expressed in the mammalian (Synapsida) genome, at the molecular level, as chromosomal phenotypes or polymorphism. Modern interpretation of the hierachic system of chromosomes regions leads to the concept of the " chromosome field " (A. Lima-de-Faria 1954, 1973). The basic quality of the central nervous system is image construction by means of symbolising (coding) of repetitive occurrences. This makes memory processes the central event and the correlate of the " distributed state " of the central nervous tissue. Behaviour is not possible without images and symbolic representation through coding systems which include, in man, language. Socio-cultural behaviour is based on the memory of a genetically harmonized group, called tradition. Such behaviour is not the product of environmental conditions, favourable or unfavourable. The sole function of these conditions is to offer opportunities to be made use of, and hardships to be overcome. To what extent and in which ways this is done depends on the genetic " field," that is, the capacity of image formation of a culturally active minority.

THE PLACE OF THE RHODESIAN MAN

In 1921, miners recovered near Broken Hill (Kabwe) in what was then Northern Rhodesia a cranium whose possessor has become known as Rhodesian Man or *Homo sapiens rhodesiensis.*

* W. E. Mühlmann (1956), in discussing cultural anthropology, sharply distinguishes between " Universelle Konstanten " and " Kulturelle Varianten."

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The closely related Saldanha skull (with mandibular fragments) was found on the surface at Elandsfontein, near Hopefield in 1953.

The Broken Hill cranium has a capacity of 1280 c.c., the Saldanha skull between 1200 and 1250 c.c. This places both specimens well within the *sapiens* range although C. S. Coon and others have classified Rhodesian Man as a late *Homo erectus*. The Acheulian type of artefacts and faunal evidence support the view that both crania date from the upper part of Middle Pleistocene or, in P. B. Beaumont's terminology, Late Early Stone Age, that is, from an epoch during which Europe and Africa were occupied by coeval *Homo erectus* and early *Homo sapiens* populations practising diverse Lower Palaeolithic tool manufacture (P. B. Beaumont 1975, in press). It should be remarked here in parenthesis that the cranial fragments found in Florisbad, near Bloemfontein, in 1932 are much younger than the Kabwe and Hopefield fossils though not as recent as C. S. Coon previously had estimated according to whom the Florisbad skull belonged to an ancestral Bushman. The new methods of absolute and relative dating indicate that the Florisbad man must be considered a true *sapiens* (*capensis*) type and not a Neanderthal (Protsch 1974).

The Rhodesian cast is one of the best preserved and reveals a number of distinctive features which already struck its earlier describers. It is now generally agreed that these features set *Homo rhodesiensis* apart from the European or classic Neanderthal; they were not contemporaries as formerly believed. Rather, Rhodesian man marks the transition or interface between the *erectus* and *sapiens* stages. (Figure 1.)

In a survey study, still in progress, of the Australopithecine fossils from South and East Africa, R. L. Holloway (1974, unpublished) comes to the conclusion that, as far as the cranium and its contents are concerned, the reorganisation toward the human pattern is reflected in the following features (in order of their importance): the non-pongid shape of the temporal lobe, the orbital surface of the frontal lobe, the expanded and distinct shape of the inferior frontal gyrus (F_3) and of the inferior parietal surface; finally, the posterior position of any lunate sulcus.

Sir Elliot Smith gave, in 1928, a detailed description of the Rhodesian endocranial cast which he called the most perfect endocranial cast hitherto obtained from an extinct member of the human family. The Broken Hill skull, now in the British Museum in London, has yielded an almost perfect mould of its interior, the subject of Smith's description: it was made by an expert in this field. The great deficiencies of the Rhodesian cast (as Sir Elliot calls them) that differentiate it from the European

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Neanderthal type reveal a " definitely more primitive condition " (Figure 2). Here is a list: the lesser extension of the prefrontal and the orbital surfaces of the frontal lobe; diminution in size in the vertical direction of the temporal lobe due to deficiency of the opercular portion and inferior temporal portion including the temporal pole, diminution (or absence) of certain parts in the postcentral region of Rolando and the upper parietal areas; lastly, a deep groove in front of the lambdoid suture on either side, probably representing the lunate sulcus led Sir Elliot to the conclusion that " the Rhodesian man must have presented a feature which is not found either in modern or extinct members of the human family, but is often present in the Gorilla and Chimpanzee."

The deficiencies of the Rhodesian cast coincide with those areas of the brain that attain their full maturity latest in the process of development of the brain of the modern human child. This statement by E. Smith clearly anticipates to a certain degree the principle of morphokinesis as set out earlier in the present paper, though, it will be remembered, in its complete form, morphokinesis includes phylogeny of the hominid brain. The said deficiencies, at the same time, coincide, as the Rhodesian specimen reveals, with those provinces which are the latest to make their appearance in the evolution of the vertebrate brain, in other words, they include most of the neopallium which we have called the basal neocortex and have recognized as the most " humanized " provinces of the brain. This is most clearly shown by the parts surrounding the lateral or Sylvian fossa. One of the outstanding features of the Broken Hill cast is a peculiar deep depression just below the prefrontal deficiency (E. Smith). It suggests by its depth and extent that the Syrian fossa in the Rhodesian Man *was still* open or at least imperfectly closed. This means that the Island of Reil (or insula) still formed a part (though a somewhat depressed one) of the brain surface. If this interpretation is correct we have here an early stage in the process of suppression of the insula during which the latter gradually looses, by receding from the surface, the capacity common to the prominent parts of the brain, to make a " digitate impression " on the inner surface of the bony brain case.

In the human foetus of five months the insula while still retaining a smooth (lissencephalic) surface starts receding from the convexity, and four months later has become almost invisible being covered by the opercular convolutions of the frontal, temporal, and parietal lobes. During this displacement into the depth of the Sylvian fossa, the insula becomes gyrencephalic, with a definite convolutional pattern; it shows, in the adult brain, one long and several short gyri.

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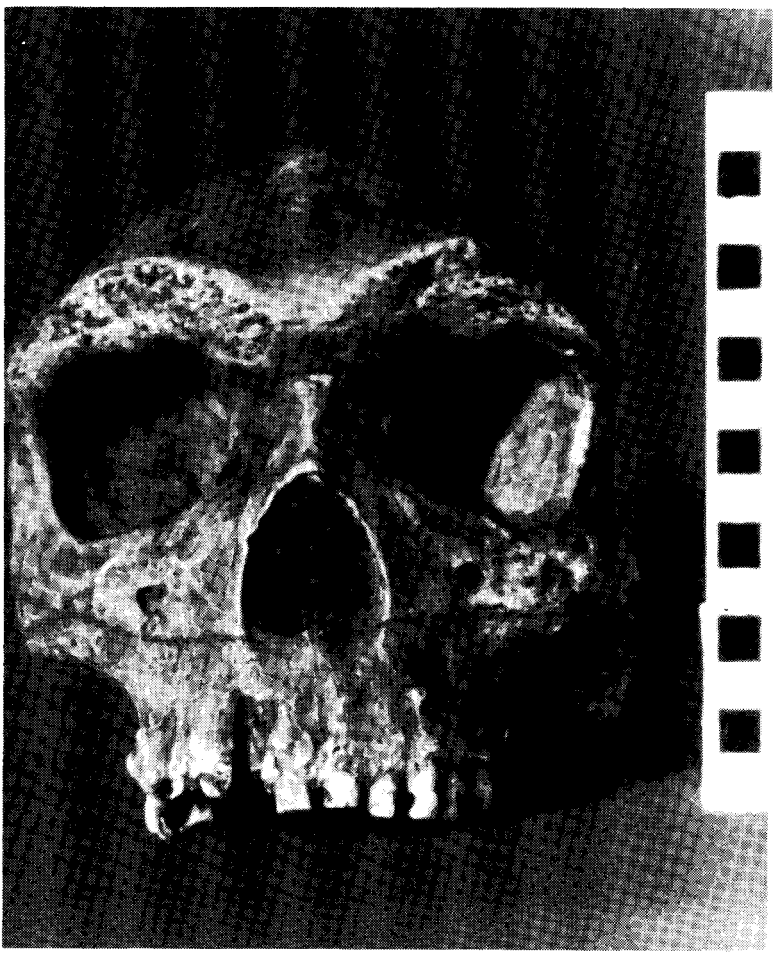

FIGURE 1—The Broken Hill skull. A recent photograph made by the Bernhard Price Institute for Palaeontology, University of the Witwatersrand, Johannesburg. By kind permission.

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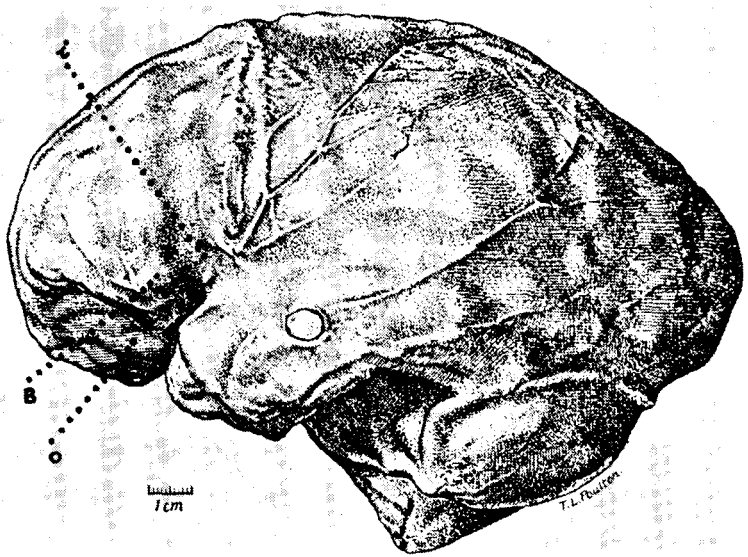

FIGURE 2—Left lateral aspect of the endocranial cast of the Rhodesian skull, on which Sir Elliot Smith based his description. A recent photograph by the British Museum, London. By kind permission.

Note: (1) Smallness of the left temporal lobe, especially in the vertical direction, and including the temporal pole.
(2) The insula (i) forming a (depressed) part of the convexity, due to incomplete opercularisation of the temporal, parietal, and frontal gyri surrounding the Sylvian fossa.
(3) Hiatus between the tip of the temporal pole and the orbital gyri (o).
(4) Prominence of the inferior frontal gyrus corresponding to Broca's speech area (B).

Again, with the insectivores at the lowest stage of primate evolution, Reil's island occupies a considerable part of the lateral aspect of the convexity and extends up to the frontal pole of the hemispheres being separated from the palaecortex by the rhinal fissure. The "sinking" of the Sylvian fossa goes hand in hand with the opercularization, and in the brain of present day man the insula forms the floor of the lateral fossa, in other words, the hiatus between the tip of the temporal lobe and the orbital portion of the frontal lobe is closed. The opercularization just described is intimately linked up with the emergence and elaboration of human speech.

First, the opercular and triangular portions of the inferior frontal gyrus F_3 (of the dominant hemisphere) coincide with Broca's centre, that is Brodmann's area 44, the expressive or motor speech area. Damage to it is indicated by the loss of

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ability to perform the co-ordinated movements required in speaking or, in clinical terminology, Broca's motor aphasia.

Second, the transverse temporal gyra, especially the anterior of them, called Heschl's convolution, represent the auditory receptive cortical centre. Its greater part lies buried in the floor of the lateral fissure but emerges to the surface to form Wernicke's receptive or sensory speech area. Its loss or damage is followed by the inability to comprehend the meaning of spoken words.

Finally, it has been established by electrode stimulation in unanaesthetized human subjects, as well as by clinical experience that the part of the superior temporal gyrus adjacent to the auditory receptive cortex (and in part coextensive with Wernicke's area) is associated with memory in such a way that with local damage the use of words becomes confused rendering speech incomprehensible. The condition is called "amnesic aphasia." Thus, all three aspects of articulate and symbolic speech, the expressive, the receptive and the amnesic aspect, are involved in the formation of the insula and the lateral fissure, a process that was incomplete at the stage of Rhodesian Man as evidenced by the Rhodesian skull and endocast.

At the Sixth International Congress of Anthropological and Ethnological Sciences held in 1960 in Paris the Russian anthropologist V. I. Kotchetkova from the Anthropological Institute in Moscow read an important paper on the "Evolution of the Specifically Human Regions of the Hominid Cerebral Cortex." She describes in detail the endocranial casts of Chapelle-aux-Saints and Techik-Tach (Uzbekistan) comparing these Neanderthal fossils with the casts of Sinanthropus from the Middle Pleistocene and of present-day man. From her studies she concludes that manipulation and handling of tools were the factors that exerted the greatest functional pressure in anthropogenesis; it is manual work which assumes "the rôle of creator of new forms" in the course of physical and cultural evolution. The cortical areas concerned with this rôle are the anterior parts of the frontal region (which is not properly defined), including the language motor zone, and the areas 39 and 40 of Brodmann lying around the posterior circumference of the Sylvian fissure part of which belongs to the inferior parietal lobe. According to the Russian author, the complexity of the cortex responsible for the manipulative function of the hand in work and writing is directly proportional to the degree of development of these functions. Furthermore, there is a certain parallelism, she says, between the transformation of the brain of fossil man and the development of culture. This parallelism, of course, is in line with the precedence postulate of the mechanistic theory of

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evolution as mentioned above. Both are based on a rigid cause-and-effect mechanism in accordance with G. G. Simpson's irreciprocity dictum that the organism is adapted to the environment and not *vice versa*.

It should be recalled here that Friederich Engels, the life-long friend and supporter of Marx, in a theoretical essay, now considered a Marxist "classic," propounded the doctrine that manual work ("Arbeit") was the decisive evolutionary factor during the transition from monkey to man. It is not surprising to find, in the second half of the twentieth century, such Lamarckian views in a paper from a country under Communist rule. The continuity of Lamarckism upheld for political reasons, was revealed most clearly by S. A. Medwedjew (1969) in his famous volume *The Rise and Fall of T. D. Lysenko*. Unfortunately, the anthropologist from Moscow in her paper is concerned solely with the convexity of the brain. She correctly points out that anthropogenesis is associated with prominence of certain parts of the cortex but does not seem to be aware of the fact that culturization is not confined to tool handling and related motor activities including writing. It is clearly and primarily a matter of those traits in human character that make the individual a useful and creative member of a culturally active community which includes behavioural traits in accord with certain generally accepted, that is, genetically and environmentally imposed rules. In her search for the "specifically human regions of the cortex," Kotchetkova fails to refer to the wealth of clinical and post-traumatic observations, especially those gained from brain injuries, during the two world wars. The extensive work done in this field by the Berlin school of brain research is either unknown to or ignored by her. Finally, she refers to certain cortical provinces which, according to her, have decreased during human evolution. She lists among them Brodmann's areas 20, 21 and 22. These are the very regions that add most to the vertical extension of the temporal lobe. The Rhodesian cast is clear evidence that the temporal lobe in its vertical dimension has increased rather than decreased during transition from Rhodesian to Neanderthal man. Obviously, for this epoch, at least, Kotchetkova's contention is not valid.

An indication of asymmetry of the two cerebral hemispheres is present in the Rhodesian endocast (E. Smith). It is more pronounced in the European Neanderthal as pointed out by M. Boule and R. Anthony (1911) in their study of the endocranial cast of the La Chappele-aux-Saints skull, and, of course, most distinct in recent man (N. Geschwind and W. Levitsky 1968). It was A. Hrdlicka (1930) who, for the first time, emphasized the presence, in the La Chapelle cast, of "two presylvian

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branches, and of a human system of opercula." Likewise, C. U. Ariëns-Kappers (1929) remarked that, in comparison with the brain of recent Europeans, the Neanderthal temporal lobe "may have been more turned inside."

All this was at a time when O. Foerster's mapping of the human cortex was as far afield as the clinical and neurosurgical experiences with localised brain atrophies and the sequelae of bullet wounds of the brain, especially in wartime. Least, the concept of morphokinesis and the functional relationship between the neocortex and the limbric brain were known, let alone generally accepted. It is for this reason that the real significance of the suppression of the insula and the opercularization of the neopallium surrounding the Sylvian fossa for the elaboration of articulate and symbolic speech escaped the attention of most workers concerned with the evolution of the hominid brain. And it is not surprising that the inferences drawn exclusively from morphological features were rather hypothetical and widely differing.

While Boule and Anthony concluded that La Chapelle man probably lacked the power of articulate speech or at least possessed only a rudimentary form of it, Grafton Elliot Smith interpreted his findings in the endocast of *Pithecanthropus* as indicating that the latter "had acquired already some sort of speech." It would seem that Ralph L. Holloway (1968) was justified when he criticized these earlier studies and, on his part, emphasized again "the relative increase of the parietal and temporal association cortex in man." If "Association cortex" is taken to mean the association areas as defined by Flechsig (1896) then Holloway's contention comes close to the position taken up in the present paper. For it is precisely those areas to which the atrophy in cases of Pick's dementia is, as a rule, confined though exceptions to the rule do occur. Thus, the rhinencephalon including the hippocampus are sometimes severely involved as pointed out by Spatz. Whether this fact is to be considered, in the general context, the exception rather than the rule, is controversial.

We now shall try to draw certain inferences, tentatively, that are suggested by the more primitive size and shape of the fronto-orbital neopallum in the Rhodesian endocast, as compared to true Neanderthal man.

First, vocalisation and vocal intercommunication. The precocious expansion corresponding to the greater part of the inferior frontal gyrus (perhaps more obtrusive on the right side than the left—E. Smith) testifies, by its inclusion of the motor speech area, to a transition from the gibbon-like call system to a human-kind articulate speech based on free combinations of

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acoustic "gestalten" or phonemes. This is in line with evidence adduced by G. B. Kolata (1974) that Rhodesian Man was in possession of a full range of vowel sounds present in extant languages. Nevertheless, the contact by vocalisation at this stage probably was within the narrow confines of seeing and hearing distance, such as in warning, announcing food, and scaring away enemies. Thus, social contact was to some extent either by odour or tactile (as between mother and child, and in courting and mating), imposed as well as limited by territoriality and dominance (H. Hediger 1961). Within the "breeding circles," as postulated by L. S. B. Leakey and, before him, by Sir Arthur Keith, that necessarily and naturally practice preferential mating, such elementary sounds provide the necessary and sufficient minimum of intercommunication. The group may have been nomadic or "open" (as in chimpanzees) or "closed" (as in baboons): in either case, information exchange by a call system at this level must have become the basis of "dialects" intelligible within the band's terrain only so that genetic split resulted in mutual unintelligibility (Hockett 1964). This no doubt strengthened the social conscience of identity within the cohesive group, as it also enhanced aversion and overt hostilility towards the "outsiders."

Second, a closely related limiting factor is indicated by the Broken Hill endocast with its primitive state of the temporal portion of the basal neocortex and its functional link with the hippocampal archicortex. Here, experimental as well as clinical and neurosurgical evidence has converged on fibretracts linking the mammillary region of the hypothalamus with the prefrontal and orbito-frontal neocortex on the one hand, and with the subcallosal (septal) region and the hippocampus on the other (R. Diepen). It is the circuitry involving these structures* which lies at the base not only of emotional but also audio-visual ideation and memory, recent and long-term, in higher primates as well as in man (B. Milner and co-workers 1968). Here belong the numerous amnesic syndromes and the so-called "déjà vu" experiences† in temporal lobe epilepsy and related psychotic states. Damage to both hippocampi in man results in a severe and permanent loss of memory and spatio-temporal disorientation.

Applied to the evolutionary level of the Rhodesian Man it seems justified that at this stage our ancestors were predominantly oriented and motivated toward the surroundings immediately "given," that is, as they presented themselves in a

* Called "l'information-circulante" by H. Laborit 1974.

† This is an illusory experience in a person who feels a new situation incorrectly as experienced already before. The phenomenon may last from minutes to several days.

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particular spatio-temporal context. In this respect, the way of life imposed and offered by the open plains of East and South Africa must have played a decisive rôle. It has been postulated by G. S. Krantz (1968) that increase in protein-rich food supplied through big game hunting and especially by way of persistence hunt has oriented human evolution toward the emergence of an imaginative creature living not only in and for the present.* With carrying, sharing, and storing of surplus food the gain in imaginative power and foresight was even greater than the supposed reciprocal feedback mechanism between protein ingestion and brain size and memory would suggest. This is evidenced by the expansion of the basal neopallium in post-Rhodesian Man as well as by the tempo of opercularisation of the limbic system with its short-term adaptability.

Our immediate ancestors, during the *sapiens* epoch proper, became increasingly concerned with anticipating things to come and with remembering and storing past experiences, in other words, the one-dimensional "now-man" became a multi-dimensional "tomorrow-man"† well aware of the time flow. Refined methods of radioactive chronometry and classification of associated faunas in South Africa and elsewhere (P. B. Beaumont, 1973, 1975) support the view that the Broken Hill and Saldanha epochs mark the beginning of the most recent transformation on the phylogentic time scales of the prehominids.

Conclusion. It is Darwin's historical achievement to have brought the principle of causality into biological (physical) evolution making its study a branch of physical science in the classical sense. However, explaining a biological process exclusively in mechanistic-materialistic terms as required by the synthetic (mutation-selection) theory of evolution means facing the dilemma of priority behaviour and genetically fixed structure, in our context: the problem of precedence of neural organisation and cultural activity. The problem is inherent in the Darwinian cause-and-effect chain. Moreover, it defies interpretation in terms of two or more positive feedback loops involving tool and linguistic efficiency, as proposed by H. J. Jerison in 1973. No doubt that both were operative in prehistoric times.

As F. Jacob recently has pointed out, the living organism is dependent on but not confined to a one-dimensional causal and temporal sequence. Rather, the organism exploits such sequences for its own ends by deciding on and pursuing a purpose or final cause (J. Monod). The genetic message can be read only by its

* H. Laborit has called the human neocortex "le cortex imaginatif" (*Homme et la ville*, 1971).

† The terms are due to G. M. Mes (1964).

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own product and in the process of realisation of the product the message becomes modified at the molecular and sub-molecular levels, in relation to, but not in dependence of the emergence of opportunities and necessities. The former are as important as the latter, and contradict the principle of an "iron necessity" as advocated by Marxist as well as theological evolutionists from Friedrich Engels to Teilhard de Chardin.

Monod has called the co-existence of objectivity in nature, that is, her causal connectivity, and the purposeful behaviour of living things the fundamental dilemma of biology. According to him, it represents a profound and flagrant epistemological contradiction.

However, it may be that the dilemma is not to be sought at such depth. The causal law is not an immanent quality of nature existing outside and independent of man from eternity, and to be "discovered" by the exploring mind. It is a construction of this very mind. And this transforms the so-called eternal or nature's laws into much more modest heuristic principles (H. Dingler 1969). Furthermore, organic structure cannot be separated from its function. Both are "given" and correspond to a particular evolutionary level. Structure represents no less an information than environmental opportunity or necessity: hence Laborit's term "l'information-structure" (H. Laborit, 1974, p. 94). To presume that any change in behaviour must be preceded, causally and temporally, by a corresponding change in structure and complexity of the nervous system or *vice versa* means to introduce a linguistic, not an epistemological element warranted only by our discoursive way of thinking and explaining. This reveals the "fundamental dilemma" as a pseudoproblem. The quantum physicist and Nobel laureate E. Schrödinger, in his essay "What is Life? The Physical Aspect of the Living Cell" (1967) states and resolves the problem by saying: "To distinguish between the possession of an organ and the urge to use it and to increase its skill by practice, to regard them as two different characteristics of the organism in question, would be an artificial distinction, made possible by an abstract language but having no counterpart in nature."

EVOLUTION REVERSED: DEHUMANISATION

> Mais la ville toute grouillante de monde ne vit pas, elle digère. Lieu autrefois éminemment propice aux mélanges des informations d'individu à individu, elle ne les propage plus que par l'intermédiaire, des mass media, sous une forme prédigerée, pour atteindre l'ensémble d'un bloc et orienter son comportement de façon automatique, previsible, sans risque. H. Laborit (1971).

In contrasting biological and cultural evolution, G. S. Simpson (1958) points out that one of the chief differences between the

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two is that cultural evolution is revocable, biological is not. This statement clearly implies the basic tenet of environmental theory that culture being system of learned behaviour is a matter of teaching and training (or drilling) oriented toward a given end as required by a sort of " contrat social " unanimously adopted by the respective group. This, in turn, means that biological evolution based on physically inherited factors in man has come to an end or, at most, plays a minor and negigible rôle since the human genes have surrendered their primacy to culture, a " non-biological agent " (Dobzhansky).

The doctrine of universal educability as the diagnostic characteristic of mankind entails the social imperative to spread universal information from a centre outside and beyond the respective societies making up the human species.

Now, even in the eyes of the most enthusiastic environmentalists the present level of human affairs, not only in the sphere of culture, is unsatisfactory and even deplorably low which makes the outlook for the immediate future rather gloomy. In the words of Simpson, the present stage of humanity is " chaotic." This is the more striking as no previous epoch in man's evolution has had at its disposal such wealth of technical know-how for a universal diffusion of knowledge as the present one. The eminent French behaviourist H. Laborit attempts, in *Les hommes et la ville* (1971) to give a kind of all-embracing explanation of this puzzling and alarming state of affairs. In his opinion, testified by our motto, there are two causes for the catastrophic decline of human interrelationship that we are witnessing at present:

First, crowding of people in overpopulated, industrialized, big centres.

Second, feeding them with prefabricated and predigested news filtered down for mass consumption by the public through a process set up and organised by agencies outside and above national and ideological boundaries. It cannot be doubted that both—crowding and feeding—are not haphazard or an inevitable historical event. It is clear that they are carefully planned and executed with precision and a wealth of power concentrated in a few hands pulling the strings behind a pseudo-humanitarian smokescreen. In short, they are tools being used for ulterior purposes (C. Quigley 1966). The French author is a pains to point out what these ultimate aims are to transform mankind into a solid, levelled-down block of human automata whose termite-like behaviour can be manipulated at will and therefore safely predicted. This means, in modern psycho-social terminology, effective behaviour control by rendering the fronto-orbital cortex (called by Laborit " le cortex imaginant ") functionless. This reduces man to the stage of the limbic palaeocortex, or, in

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Laborit's words, to the level of the reptilian brain. What is attempted here, on a world-wide scale, is man-made evolution working in reverse, in other words, dehumanisation. At this level which is brought about by extreme urbanisation and its concomitant, diffusion of manipulated information (popularly called brainwashing) man becomes a victim of his surroundings with only two alternatives to choose: fight or flight (" la lutte ou la fuite "). Both alternatives are well calculated: aggression and violence, in whatever form, will aggravate the existing chaotic state and thus accentuate the lack of " law and order " in the service of subversion and proletarian revolution. Submission, on the hand, will end up in ever-increasing exploitation on the part of those " at the top."

The most revealing symptom of the contemporary palaeocephalic state of mankind as experienced by even a casual observer of our every-day life is the regularity of stereotyped responses to preselected stimuli in the Pavlovian fashion of conditioned reflexes. These responses have become ritualised to a degree of absolute predictability. They are fortified and perpetuated by the news media whose strategy is based on the recompense-reinforcement mechanisms worked out by the behaviouristic school of social engineering and behaviour control. People at the receiving end of this mass indoctrination remain unaware of this kind of predigested " food " they are fed with. The mass media serving these ends have recently been called cretinizing institutions. Indeed, they degrade humanity to a pre-hominid level that finds its parallel in the ritualism of the neanderthaloids of which there is ample evidence, especially in connection with skull cult and cannibalism. The sites of Monte Circeo and Krapina in present Yugoslavia are most revealing in this respect. Chard believes that such repetitive pattern of behaviour presupposes the existence of a sort of vocal communication " approaching human language." It is tempting to imagine that it was not unlike the kind of vocalisation to be heard, at mass rallies, in our radio and television broadcasts. This applies equally to countries under Communist and Capitalist rule.*

With this paper coming from a multi-racial country which is fast becoming a focus of interest of the world's leading economists

* The reader interested in the so-called " New World Order," that is, disguised world dictatorship, is referred to the following publications taken from a vast literature on the subject: Medford Evans, " New World Order —Through Giant Multinationals," *Review of the News,* Belmont, Massachusetts, U.S.A., December 24, 1974; Gary Allen, " The C.F.R., Conspiracy to Rule the World," *American Opinion,* Belmont, Massachusetts, 1969; Samuel Pisar, " La face cachée des événements monétaires," *Réalités, Revue de Paris,* No. 310, November 1971, pp. 34-47.

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and politicians I cannot refrain from touching upon an especially ugly effect of uprooting and detribalizing a native population the members of which for thousands of years have lived their own lives according to their inborn nature, habits and moral concepts. These people strive to maintain their identity of race and even as members of a particular tribe.* The Bantu of South Africa reject, in their majority, both social and cultural assimilation. All this has changed drastically and, it would seem, irrevocably since the sequelae of the industrial revolution and the rise of capitalism with their rapidly expanding technology made their impact on the people of South Africa and their inter-racial attitudes. The big European-styled cities like Johannesburg attracted with their mines and all sorts of industrial undertakings a rapidly increasing number of people from rural and tribal areas in the quest for easy money. This grand-scale migration of native labour of necessity went and goes hand in hand with a break-up of tribal life and tribe morality (P. and I. Mayer 1974). I refer especially to the work by Laura Longmore (1959).

Certainly, the coin has two sides: without the impact of European civilisation and culture, the Negro would have been inexorably extinct over wide areas of Africa due to slave raiding, tribal warfare, and lack of health and welfare services (P. L. Breutz 1963). However, what we are witnessing when mixing a tribal society with members of an advanced industrialized community of Western style is a sad experience: the immigrants into the urban belts absorb all too easily the vices of Europeans who, in part and in their turn, have lost touch with their own kind and tradition thus becoming supporters and handy-men of international financiers and exploiters.†

It is most astonishing that attempts to improve the evil conditions by providing opportunities for the Native people to live according to their own customs and mores are fiercely opposed not only by those in the service of Big Money but also by so-called "liberals" of all shades and all ways of life, members of the clergy and communist-inspired trouble makers. For the wealthy business classes of industrialized South Africa and their servitors the degradation of Bantu people, disguised as "racial equality," is a matter of necessity: the loss of cheap Black labour would mean for them introduction of expensive mechanisation on a grand scale and supplemented by equally

* See R. Gayre of Gayre, "An Empirical Consideration of Differences Between the Bantu and the European," THE MANKIND QUARTERLY, Vol. XIII, July-September, No. 1, 1972, p. 19 ff. Also Vusamzulu Mutwa, *Africa is My Witness*, Blue Crane Books, Johannesburg, 1966.

† "Le capital n'a plus de patrie, le prolétariat ne devrait plus en avoir" says H. Laborit in his *L'Homme et la ville*, p. 188.

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expensive European technical personnel. In this respect, South Africa in its industrialized parts is a model " en miniature " of what is going on elsewhere: under the propagandized slogans of equality, brotherhood, " family of man " and the like, a grand-scale process of up-rooting and deculturisation is maintained with the aim of establishing a world superstate represented by a handful of dictators ruling over a mass of mongrelized reptilian brains. For in South Africa, as elsewhere, the Press and mass media being under control of an influential minority, generally known as " Big Business," that is, wealthy exploiters, popularize overtly or in disguished form social integration and intermarriage. They are, as experience has confirmed elsewhere, mutually dependent and inseparable from each other.* Even members of the higher echelons of the social ladder, scientists and university teachers have begun, for some reason or other, to join issue with this kind of propaganda by minimizing racial differences and ridiculing race as a " myth " or a mere " paint job."

A. Solzhenitsyn, in his famous *Letter to Soviet Leaders* (1974) unmasks the universal obligatory force-feeding with arsenals of lies practised behind the Iron Curtain; it is hoped that he has found by now, after crossing the frontiers, that people in the so-called " free West " are subjected to the same kind of mass indoctrination and for the same purposes.

Thus, on the whole, the outlook seems little promising, at least for those who have outgrown their reptilian heritage. Most behaviourists (including H. Laborit) in searching for a way out of the present-day chaotic state of mankind see the only hope for such escape in a diffusion, on a world-wide scale, of knowledge concerning the true nature of pre-hominid automatisms; they are oriented towards short-term reward that inevitably results, under conditions of increasing population growth, to a division of mankind into dominant and dominated classes, that is, exploiters and exploited.

To break the vicious circle a commanding agency is envisaged outside of the present social system to function as a kind of servo-mechanism which is supposed to achieve what is called, in cybernetic terms, a self-perpetuating and self-balancing feed back of social equilibrium. This hopeful view rests on two unproven assumptions: the assumption that biological (or physical) evolution cannot and will not proceed beyond the level attained by the cerebral organisation of *Homo sapiens,* and, secondly, the assumption that the world of symbols based on

* C. D. Darlington, writes in *The Evolution of Man and Society*, 1969, p. 606: " Sexual relations are a continuation of social relations; and conversely likewise."

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images, that is, long-term memory processes is instrumental solely in the mythopoetic, demoniac and magic-ritualistic spheres, or, again, as Laborit believes, as the chief source of anxiety and psychic terror reactions.

We reject both assumptions as hypothetical. Spatz and his school maintain, on good grounds, that there is no reason to suspect that the human brain, and especially its most human-like parts, have ceased further to evolve along the lines of particulate genetic change. Their ongoing evolution, based as it is on hardly predictable recombinations within the genetic pools of interbreeding social groups, may even be an important aspect of a more general phenomenon in hominid evolution referred to as "acceleration." In this case, the historical route evolution will take is entirely unforseeable (M. Eigen 1971). Historical figures like Lenin and Hitler provide evidence of the inexhaustible variability locked up in our genetic material. C. D. Darlington, in his genetic analysis of man and society, gives a comprehensive record of Lenin's forefathers. "Lenin's four grandparents," says Darlington, "were thus of four different races and religions and both his father and his mother's father were of the professional class from whom, as he himself was to declare, all revolutionary teachers were derived." It may be noted, in passing, that Lenin's grandmother came from the Volga German community settled by Catherine the Great, a German princess, three generations earlier. Lenin's mother had broken out of his community and married a well-to-do retired Jewish physician by the name of Alexander Blank. Hitler's ascendancy is no less revealing that Lenin's, and one can be sure that it will not be neglected, in due time, for reasons of a short-lived and short-sighted political conformism.

Finally, as we have tried to show in the foregoing sections, without imagery and symbolic ideation, man would be deprived not only of his myths and motives of most of his behaviour and his vital psychic reactions but, more important, also of his ability to conceive ethical values and to create works of art and science, including the science of Darwinian evolution.

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The Racial History of Europe: An Outline

By BERTIL LUNDMAN*

THE RACIAL ORIGINS OF THE INDO-EUROPEANS

In this paper I propose to advance some ideas concerning the history of the origin of the races of Europe. These will concern almost only their later phases—namely from the Neolithic period onward. The earlier times are still largely shrouded in darkness.

The blond Nordid race evidently has its origin in northern Europe—or at least not far to the southeast of this region. However, the Nordic tribes migrated quite early out of their poor homeland into the richer lands of the south. The northerners came as conquerors and colonists. In general, however, they gradually disappeared into the earlier population, which was better adapted to the more southerly environment.

On *purely* linguistic grounds, the *proto-Indo-Europeans* appear to have originated through the mixture of at least two population-elements (*Volkselemente*) — presumably a more southern and a more northern. If this view is correct, then the Indo-European group living furthest to the southeast—the Indo-Iranians—should be derived more from the southeast proto-element and less from the groups living further to the northwest. Now according to the ancient pictorial and literary representations, the early Indo-Iranians appear to have contained rather little of the blond racial element. In contrast, the rest of the Indo-European peoples appear to have been predominantly *blond*. Finally—and this is important—this applies *also* to the *Tocharians*. The Tocharians, who migrated to Central Asia, originally belonged to a western Indo-European group.

According to the ancient portraits, as well as the cranial evidence, the dark element of the early Indo-Europeans must have consisted predominantly of East Mediterraneans. The blond Indo-European element, which derived from northwest Europe, must have been racially Nordid—if we employ this concept in its broadest sense.

The oldest certain Indo-European crania which we know from Central Germany to the southeast originate from the Stone-Copper-Age and the early Bronze Age. These crania are everywhere in this region always more or less long-skulled and *high-skulled*. They are not long-skulled and *low-skulled* like the crania of the living Scando-Nordids. Extremely long and high were the

* Translated from the German by Donald A. Swan.

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crania of the late Neolithic East German Corded-Ceramic people. The Corded-Ceramic people are generally regarded as a rather important component of the Indo-European core.

We shall briefly survey the anthropological relations in northwest Germany and Scandinavia somewhat before B.C. 2000. This part of Europe nowadays constitutes the nuclear area of the Faelish and Scando-Nordid races. To the northwest of the Corded-Ceramic people, there lived in *Germany* the Megalith people. The Megalith people of Germany were typically long-skulled and low-skulled, and in relation to face and nose rather Faelish in race. On the Scandinavian peninsula we find among groups, who perhaps had not yet been Indo-Europeanized, likewise long and low crania—but narrower faces and noses.

These two groups—the one in northwest Germany and the other in Scandinavia—were thus racially related to one another, as well as to the blond proto-Indo-Europeans. We can perhaps consider the three groups as three subraces of the Nordid race—namely, the Faelish subrace, the Scando-Nordid subrace, and also the long- and high-skulled East-Nordid subrace. The East-Nordid should be regarded as a subrace of the Nordid race, since it resembled the other two subraces in so many anthropological traits. The region of origin of all three subraces evidently bordered on one another.

The racial and *cultural* position of the West-Indo-Europeans is well illustrated by the blond, long- and high-skulled type. Thereby, their region of origin is restricted to the border land between Central Europe and East Europe. In the earliest times the Indo-Europeans were probably still half-dressed in the summer. Blond men could not have lived long in areas further to the southeast in Europe. This is especially so because at that time the post-glacial dry and warm climate-maximum still continued.

In comparison, high-skulled populations have not penetrated far to the northwest of Europe. We find a rather strong racial *and* cultural contrast between the Thuringian Corded-Ceramic people and their Megalithic neighbors to the west. This indicates that the former are migrants from southeast Europe. Therefore, one could place the Indo-European homeland in the loess-earth and steppe-forests (at that time) east of Thuringia (see Map 1). *On bio-climatological grounds*, this Indo-European homeland should not be searched for much more to the east.

This proto-Indo-European East-Nordid race has now almost disappeared. This is evidently a consequence of the forceful—one might say "explosive"—expansion of the Indo-European peoples. Some living high-skulled Nordid types in Poland, Russia, Finland, and the East Baltic region can be derived from the

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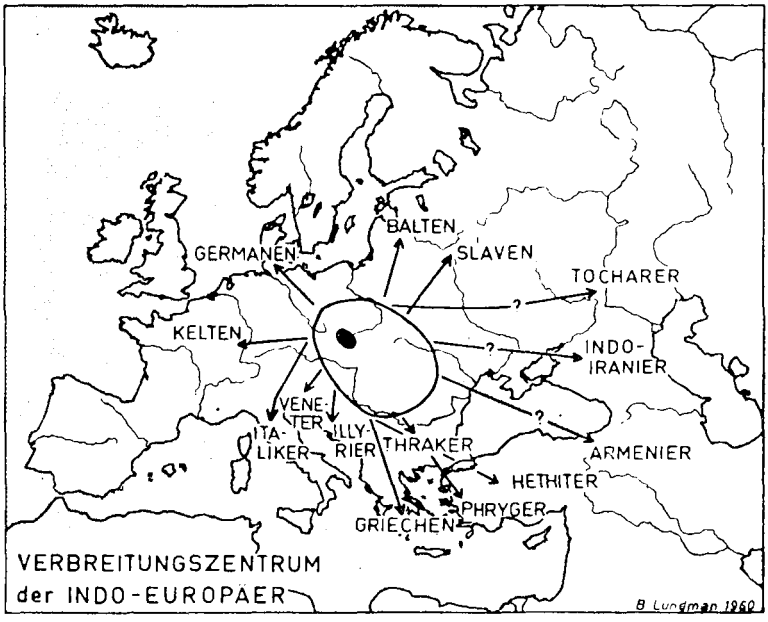
proto-Indo-European East-Nordids. Thus, not all of the living high-skulled peoples of this part of Europe can be regarded as mixtures of the Scando-Nordid (or East-Mediterranean) and East-Baltid (or Dinarid) races. In addition, one must naturally keep in mind the slight blond elements still existing at present among the eastern Indo-European peoples. This is especially so in the case of the Kurds in northern Mesopotamia. But, blond elements also occur further east—up to Kashmir in northwestern India.

The racial history of the *Scandinavians after* their eventual "Indo-Europeanization" can be briefly summarized as follows. The sharp deterioration in climate in northern Europe from B.C. 600 to 400 drove some of the Scandinavian tribes southward to Germany. In comparison, the migrations of the Anglo-Saxons to England and the Scottish lowlands occurred later in history—beginning around 400 A.D.

The grave-fields of the conquering Germanic tribes in large parts of Europe at that time show in a striking manner almost



MAP 1—The first migrations of the Indo-European peoples (Lundman, according to Bosch-Gimpera, 1960). The large ellipse on the map designates the oldest known center of distribution of the Indo-Europeans. The point within the ellipse corresponds to the so-called Moravian portal. The arrows indicate the earliest migration-directions of the different Indo-European groups.

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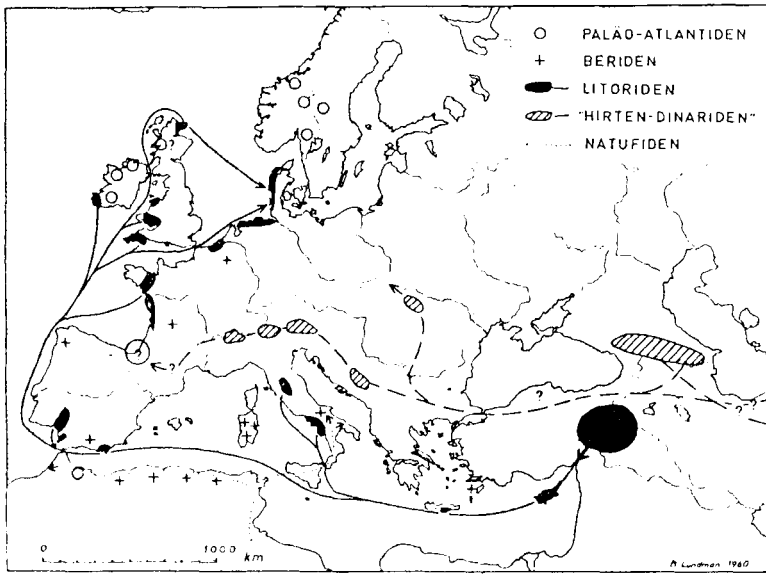
MAP 2—The geographical distribution of the races of Europe (Lundman, 1960).



MAP 3—Early migrations of the races of Europe (Lundman, 1957).
(Natufids = Prae-South-Mediterranids).

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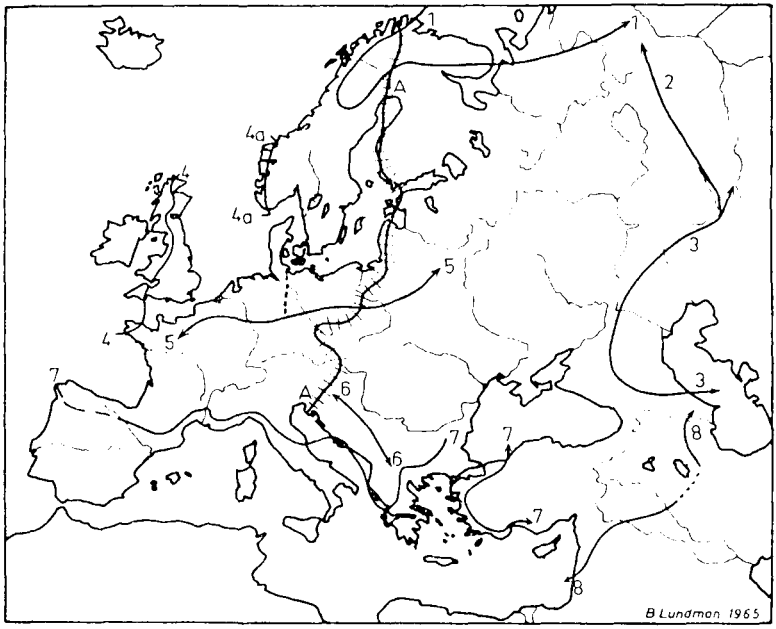

MAP 4—The approximate coincidence of racial and natural boundaries within Europe (Lundman, 1963—according to different sources).

Natural Boundaries

1. Northern forest boundary.
2. Boundary of the western base of the Ural Mountains.
3. Salt-steppes boundary.
4. Eastern boundary of stronger oceanic features in climate.

4a. Eastern boundary of stronger oceanic features in climate.

5. Loess Belt—north boundary.

6. Alpine Region—east boundary.
7. Northern boundary of Mediterranean climate and vegetation.
8. Southern and eastern boundary of the Anatolian Mountains.

A. No features of climate and vegetation, but strongly pronounced racial boundary.

Racial Boundaries

1. Mongolid southern boundary.
2. Mongolid western boundary.
3. Mongolid south-western boundary.
4. West-Antlantid race boundary.

4a. Alpinoid coastal region.

5. Northern boundary of stronger Alpine admixture.
6. Dinarid race eastern boundary.
7. Mediterranean race boundary.
8. Armenid race boundary.

A. Western boundary of populations with high skulls and a higher frequency of blood type B.

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only Nordic burials in the older sections. We can recall in this respect the words of Tacitus in his famous work *Germania.* Naturally in the more recent burials, mixtures with the older European populations occur more frequently. The homogeneity of the early Germanic and many other Indo-European peoples was evidently favored by their " blond ideal of beauty " (*blondes Schönheitsideal*).

THE ORIGIN OF THE RACES OF EUROPE

Now we shall briefly outline the most important facts known to us of the still older history of the *races* of Europe. The present geographical distribution of these European races is shown in Map 2. The Palaeo-Atlantids are relatively unmixed and unaltered descendants of the Palaeolithic West European and North African Cro-Magnid race. The Cro-Magnids followed northwards the retreating ice boundary at the end of the Pleistocene. They lived as specialized hunters of the fauna inhabiting this part of Europe.

The Palaeo-Atlantids were never as depigmented as the Faelish and Scando-Nordid tribes who migrated after them. The latter two races have originated from other, later, closely-related Cro-Magnid proto-groups. The Faelids and Scando-Nordids were already at that time racially and culturally somewhat more highly developed. They gradually forced the Palaeo-Atlantids back into their present, barren places of refuge. The North Atlantid race is probably only a variety of the North race. To be sure the North Atlantid race is a native race, but more southerly accentuated and more pigmented. This is a result of a less cold, but damper climate and contact with the more pigmented European races.

The southwestern European racial groups—Berids, West-Mediterraneans, and Alpines—evidently originated from shorter-statured and darker Cro-Magnids. These more southerly Cro-Magnids were less adapted to cold climate.

Most of the Berids live in the more unfavorable areas of southwestern Europe. In part they were forced there by other races. In the case of the Berids, we evidently have before us a more original type.

Hence, the more gracile West-Mediterraneans originated then in the more favorable regions of this part of Europe. Their present overly slender extreme-types are probably entirely late products of the environment. These body types—as in the case of similar types of other of the more slender races—were lacking in their actual rather near-peasant forefathers.

The *Alpine race* arose only rather late through brachycephalization in the poorer and colder regions of Berids and Berid-mixtures. The origins of this race can be traced back to the

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Neolithic period. But, only in the Middle Ages is the Alpine race more strongly prominent.

The East-Mediterraneans and the East-Alpines have probably originated in an approximately similar manner from *East European* long-skulled and high-skulled old groups (*"Brunnids"*). These groups probably came across East Europe and southwestern Asia from northwestern—perhaps even central—India in the later Old Stone Age.

The ancestors of the Scando-Lappids—who are at the same time high-skulled and low in the frequency of blood type gene q—had probably already become separated at the end of the Ice Age somewhere in eastern Central Europe—possibly in the West Carpathian region. They then followed the retreating ice as hunting tribes of the reindeer and other wild life east of the Baltic Sea. Finally, the proto-Scando-Lappids become domiciled in the northern Scandinavian subpolar region. Consequently, they are also not strongly depigmented.

The Scando-Lappids are reduced in stature and unique in anthropological traits. However, they are not at all Mongolid. At most the Scando-Lappids are a parallel-developed, but very unique, sister-race of the East-Alpines.

In the northeastern portion of their homeland the Lapps have then probably been exposed to stronger Mongolid racial and also cultural influences at some unknown time. These were mostly of the Taigid race. Thus, have originated the East-Lapps.

The East-Baltid race developed out of the old type closely related to the Volgids. Their region of origin must have been located in a rather cold and frequently clouded region. This would have been close to the Baltic Sea and the depigmentation zone of the Nordic groups.

We find weak, but well-attested, Mongolid traits among the *blondest* East-Baltid groups. These traits show how old—in part *before* the process of depigmentation — a weak Mongolid admixture must be in *northern* Russia — from the northeast onward. Evidently, it is much older than the Mongolid admixture in the formerly East-Mediterranid southern Russia. In this part of Russia the present still somewhat weaker frequency of blood type gene q shows that the Scythians in antiquity had scarcely any Mongolid strains!

The East-Mediterranids probably originated in the northern part of southwest Asia. They then spread out northwards to southeast Europe and southern Central Europe. In part this already occurred in the Stone Age. Other branches of this race migrated eastward as far as Central Asia.

The Dinarids and Armenids have originated in a similar manner. These two races have also become brachycephalized

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only during a later stage of phylogentic development.

However, we find most certain Armenid types, of almost modern stamping, already among several groups of the very active so-called Bell-Beaker people at the end of the Neolithic period. Perhaps they came as small groups of traders in metals and amber out of the now Armenid northern part of southwest Asia across Spain up to the West and Central Europe.

Presumably, the development to Dinarids and to Armenids occurred in parallel. Still, some investigators want to localize a common center of origin in the Balkans, others in Armenia, or even in the Caucasus.

The Carpathids are probably a parallel case to these Bell-Beaker people. They originated from Armenid metal-seekers in mixture with the pre-East-Alpine older population in metal-rich northern Hungary. In this case, it must be remembered that the relatively large, somewhat curved nose is inherited as a dominant trait.

We also find some other old, eastern, round-skulled and high-skulled, dark strains, which are higher in the frequency of blood type gene q, in some of the coastal regions of West Europe. These strains are our Litorid race (see Map 3). They are approximately equivalent to Denniker's Litoral race. The coastal regions were these strains are found include: the Swedish western coast, northwestern Jutland, the Dutch province of Zeeland, Kent in England, northeastern Scotland (where the frequency of blood type gene q reaches almost 10 per cent), the Isle of Man, southwestern Ireland (Valentia), western Wales, Cornwall, and western France (Brittany, Gironde).

There is an especially strong concentration of Litorids in the old mining regions of southwestern Spain (" Tharsis " on the Rio Tinto is only the ancient name of a modern mine). The Litorids are found deep into the interior of Spain and further east on the south coast around Cadiz and Malaga.

In the Mediterranean Sea region, however, on the island of Malta and around Naples, we approach so strongly the present area of dispersal of the Armenid race that the question is no more of the same interest. Naturally, many descendants of later migrants from the Near East also dwell in the above-named areas.

Peake and Fleure, who dealt with these problems in their ten-volume series, *The Corridors of Time*, explained these racial occurrences in terms of seekers of noble metals and also amber coming from the Near East. In part, these migrations took place in the very early Bronze Age. However, at that time the coastal region of the eastern Mediterranean Sea was inhabited almost entirely by low-skulled and long-skulled Arabids.

Round-skulled and high-skulled Armenids (no one has thought

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of Dinarids) had just reached the innermost northeastern corner of the Mediterranean Sea in greater number from the northeastern part of the Near East in the early Bronze Age. This may possibly give an indication that the Armenids brought the art of copper-mining with them to Cyprus from their old home. All this is extremely problematical. Still many of the existing occurrences of Litorid strains in outlying regions of western Europe are not at all explainable through eventual migrations in historical times.

We have previously discussed the similar ancestors of the Carpathids in eastern Central Europe, as well as the Bell-Beaker people of prehistory. These two groups with their almost exclusively inland distribution still were not identical with the Litorids whose forefathers almost always settled near sea coasts. It appears probable that all three groups were only different parts of a great early-metallic culture-stream from the northern Near East.

The Etruscans migrated to Tuscany in Italy from adjacent regions in the Near East on the threshold of history. The Etruscans came to Europe with similar goals. They also were characterized by an anthropological structure similar to the Litorids. The descendants of the Etruscans still survive in great number—especially in the metal-rich southern part of Tuscany. In this part of Italy we find relatively high values of blood type gene q.

SYNOPSIS OF EUROPEAN RACIAL HISTORY

From the above outline of the history of the origin of the races of Europe, we can determine *seven fundamental facts for the racial history of Europe*: —

1. The probable late-Palaeolithic and Mesolithic (Ice Age and early post-Ice Age) depigmentation in northern Europe.
2. The contrast between the low-skulled Cro-Magnids in western Europe and the higher-skulled Brunnids in eastern Europe, which has existed at least from the Neolithic period onward.
3. The northward migrations in the early Neolithic period by agricultural, more-or-less, East-Mediterranean tribes out of the Near East into the Danube region up to southern Germany.
4. The southward migrations of the more-or-less strongly Nordid tribes of Indo-European peoples out of Southeasternmost Germany to the north Carpathian region and other areas from the end of the Neolithic period onward.
5. The racially less significant northward migrations of smaller, predominantly noble-metal-seeking groups of traders out of the Near East from the late Neolithic to ancient times.

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6. The Central European brachycephalization, which occurred predominantly in the Middle Ages.

7. Refinements in the face and bodily form produced by environmental and hereditary changes at different—and *not only* recent—times.

The two last-named changes work in part against one another. For if the brachycephalization goes in an " Alpine direction," it goes against a rounder—and also more round-browed—head. That is, it is to a certain degree an infantilization. But to judge from the anthropological finds, the brachycephalization is associated only to a small degree with a simultaneous infantilization of face and structure of the body. For the " Pre-Alpines " were evidently already rather small-faced and round-faced. (Unfortunately, we know less of their bodies.) However, it holds up at least the rather general " linearization " (" *Vershmälerung* ") trend. It probably often results in some physical changes in the reverse direction.

Now we come to *very* important changes in the peoples of Europe, which are however still little known. Furthermore, through the processes of sifting and selection these changes have brought about a rearrangement of social strata in Europe. They are especially important in this way, so that apparently in part constitutional hereditary factors are often involved here. These can affect the hereditary psychological character of peoples.

We can present as an example just two contrasting countertypes—which are not only simply racial in origin, and still less only phenotypically environmentally conditioned. This is the contrast between the cool, hyper-leptosome, still near-sinewy, English aristocrat (predominantly Nordic, but still somewhat North-Atlantid or even Litoral mixed in race) and the industrious, hypomanic, often aesthetic, south German provincial inhabitant.

The increase in stature—especially in northwestern Europe—in the last century is probably almost entirely phenotypical. It is also predominantly a consequence of modern industrial civilization. We shall not consider this phenomenon at this time. There has also been observed in very recent times a reverse trend toward " debrachycephalization."

The major racial contrasts in Europe are between the blond North and the brunet South and between the low-skulled West and the high-skulled East. These regional differences have remained approximately the same for several millennia.

The racial structure of the old historical European peoples—the Greeks, Romans, and Celts—has been treated at length in my book *Geographische Anthropologie* (1967). Certainly, these peoples had, at least in their upper social strata, stronger Nordic components than the present inhabitants of these lands. We shall

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not at this time discuss the racial changes in the peoples of Europe in the Middle Ages and in modern times—apart from what has been presented above.

Europid races are not found exclusively on the continent of Europe. Throughout the entire Near East region of Asia there are almost only races of our Europid or White primary race. Only those in India and in the northernmost part of Africa exceed these in *more compact* measure. We have recognized that the last shaping of these groups—for the most part in their present regions of distribution, or in their vicinity—has resulted from different evolutionary and selective forces (see Map 4).

GEOGRAPHY AND THE ORIGIN OF RACES

Thus, almost every racial nuclear region arose out of a unique natural population. But, occasionally one can also speak of the multiple, parallel origin of almost completely similar human groups. These groups embraced a series of similar homeland spaces, separated by regions of a different geographical nature and only loosely linked to one another.

In this regard I think above all of the Alpine and Dinaric " mountain-races " (" *Gebirgsrassen* "). However, such mountain regions are situated too distant from one another. In addition, their populations become somewhat less similar to one another. This is as much due to a somewhat different origin, as to later moulding.

In this respect I think, for example, of the West-Alpines and the East-Alpines. Another example is the " Taurid " group of races. These comprise the Dinarids, their Caucasian relatives (the " Mtebids "), and the Armenids, who are a little more distantly related to them.

Sometimes such a disjoint distribution has arisen geographico-anthropologically in this way. Consequently, the economic forms of these mountain peoples made easier a migration from mountain region to mountain region rather than settlement in the plains lying in between them. This is demonstrable in the case of the Dinaric groups from the western Balkans to the Carpathians. Naturally the reverse holds for the migrations of Asiatic steppe peoples into the Hungarian Pussta region.

Each of these pronounced natural regions (" Racial breeding-grounds ") often retains and maintains its more or less distinct form of man. Of course, one frequently does not know the details of the causes of their particular formation. Chance " early migrations " and later adaptations to the homeland region are involved. Moreover, social selection and sexual selection are also active in these processes of race formation.

The results are, however, clear. The often high frequency of

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similarly directed genes at *different* loci is interesting in this respect. An example of this is the strong depigmentation of the Nordid race in skin, hair, and eyes. We also have the enlarged nose of the Taurids in relation to all other parts of the body.

However, a single individual seldom or never attained even in these places all the highest possible values of the traits. For example, in central Sweden the depigmented individual rarely reached the border of a less life-efficient albinism! Thus, the races are more or less dynamic systems. They are never fully finished. In part, races are only formulations to a development whose completion would be directly harmful, perhaps fatal, to them!

Smaller regional differences naturally have often occurred much later. They can frequently be explained historically through migration. Thus, occasionally we find poorer regions in Europe which are not at all like the usual breeding grounds of groups forced into these areas, such as the interior of Wales, Inner-Sardinia, and Lappland. To the contrary, these other regions were often populated by alien groups only late in history. Examples of such areas are certain sandy-soil regions in northwestern Germany and some bare mountain regions in western France. In the Swedish-Norwegian border-forests, there are besides some very early Palaeo-Atlantids also regions which only around 1600 A.D. were settled by forest-clearing Finns. These Finns mostly came from eastern Finland. Thus, racial geography is a complex, as well as, interesting and productive science.

SUMMARY

The origins of the races of Europe can be traced back to the end of the last Ice Age and the beginning of the succeeding Mesolithic period. The retreating ice cover opened up for settlement new areas of Europe. Changing climate, expanding area of settlement, and more varied habitat provided the selective forces for differentiating and moulding the living races of Europe.

The descendants of the West European and North African Cro-Magnid race followed the retreating ice into western and northern Europe. The earliest migrants were the Palaeo-Atlantids, followed by the Faelish and Scando-Nordids. The depigmentation of the Faelish and Scando-Nordid races appears to have occurred as an adaptation to the cold and cloudy climate of northern Europe. The East Baltid race in adjacent areas of northeastern Europe also became strongly depigmented or blond. In the warmer and damper northwest of Europe, however, the Palaeo-Atlantid and North Atlantid races became only partly depigmented. Thus, arose the contrast between the blond North

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and the brunet South of Europe which has existed for several millennia.

The southwestern European races—the Berids, West-Mediterraneans, and Alpines—evidently originated from shorter-statured and darker Cro-Magnids. These races were less adapted to cold climate. The origins of the brachycephalic Alpine race can be traced back to the Neolithic period. However, the Alpine race only became prominent in the later Middle Ages of Europe.

The East-Mediterranean and East-Alpine races probably developed from the long-skulled and high-skulled Upper Palaeolithic races of southeastern Europe and the Near East. These races also moved northward into central and eastern Europe in the early Neolithic period. They were preceded by the related, but shorter-statured Scando-Lappids, who followed the retreating ice northeastward as specialized reindeer hunters. These races of eastern Europe, together with the blond East-Baltids and the brunet Volgids, are all high-skulled. Thus, arose the second major racial contrast in Europe—between the low-skulled West and the high-skulled East which has remained virtually constant for several millennia.

The Dinarids and the Armenids arose in the northern part of southwestern Asia and later became brachycephalized. The expansion of these races to other parts of Europe, together with the Litorid settlements in northwestern Europe, may be a result of later migrations of prospectors and mining specialists in the late Neolithic and early Bronze Ages.

In the late Neolithic and early Bronze Age, the proto-Indo-European culture arose in Central Europe. The southeastern-most Indo-European group—the Indo-Iranians—seem to have been basically East-Mediterranean in race. The other Indo-Eurpoean groups, however, appear to have been predominantly blond and Nordid in race. From the early Bronze Age onward, southward migrations took place of blond Indo-European peoples from Central Europe and the northern balkans into the southern Balkans and Mediterranean region. These migrations gave to Europe virtually all of its present languages, its mythology and culture, and its basic social structure.

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The Tukano Indians and Advancing "Civilisation"

By FRANCIS A. KNOBLOCH

THE EASTERN TUKANO TRIBES

THE COUNTRY

One of the most important affluents of the right bank of the upper Rio Negro is the Caiari or Uaupés river. Its sources are in Colombia but the middle and upper courses are in the Brazilian state of Amazon. The direction of the river is west to east, between longitudes 67 degrees and 72 degrees west and latitudes 0 degree and 1 degree North. The Caiari's principal tributaries on the right bank are the Papuri and Tiquié, and on the left bank the Querari.

Near Jauareté, in the middle course of the river, two forest trails lead in a northerly direction to the upper Aiari river, a right bank tributary of the upper Içana. Other forest paths link Jauareté with the Tiquié river and the Tiquié with the Traira river. The Traira is a left bank tributary of the upper Japura river.

The whole country is covered with dense tropical forest. There are some low " island " hills near Bela Vista, near Taraqua, and near Jauareté (Serra dos Porcos). There are more hills between the Uaupés and Tiquié but they are not recorded on any maps. Between Taraqua and Jauareté the Uaupés forms various rapids, the most dangerous of which is the Ipanoré. The Cachoeira, Papuri and Tiquié rivers also have rapids, such as the high Cacuru falls.

The climate is hot and humid and the flora and fauna resemble those of the Rio Negro.

THE TRIBES

THE " TRUE " TUKANO GROUP[1]

Tucanos or Dachsea—This is the principal tribe of the whole group. Their original common-houses (*malocas*) are sited on the Uaupés river at Agutiroca, Taracuá, Capuari-Igarapé, and Mapa; at Urubu-Lago on the Papuri river; and on the Tiquié river at Santa Isabel do Tucano, Cabari-Igarapé, Pari-Cachoeira, and Jabuti cataract.

[1] This is partly from my own observations. The tribal divisions are drawn from Cestmir Loukotka, *Classification of South American Indian Languages*, Los Angeles, 1968, pp. 182 and 186, and information on common-houses from Dom Pedro Massa, *De Tupan a Cristo*, Rio de Janeiro, pp. 53-63.

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Tuyuka: Their country is the upper course of the Tiquié river and their main common-houses are to be found at Pinocoaliro, Umari-Igarapé, Periquita falls and Cabari.

Uanana: Their common-houses can be found on the banks of the Uaupés above Jauareté-Cachoeira.

Pira-Tapuya: Their original villages are on the Papuri river. At present there is a colony in Bela Vista on the lower Uaupés. Anthropologically they differ from the other Tukano tribes, being more narrow-skulled.[2]

Arapaço: They are to be found in small settlements on the middle course of the Uaupés between Taraqua and Jauareté. They are interesting because of their light skin and for the fact that they have completely lost their own language—the Arapaços now speak only Tukano.[3]

Carapanás: Because the bulk of these tribes are in Colombia there is only one small settlement on the upper Umari-Igarapé between the Tiquié and Papuri rivers.

Bará—A small tribe with two common-houses at the course of the Tiquié in Colombia.

CORETU GROUP

Miriti-Tapuya—Today they are settled on the middle Tiquié in the villages of Sao Tomaz and Iariti. They are a tall people.

DESANA GROUP

Desána (Sons of Thunder)—Their common-houses have always been situated on the Tiquié and Uaupés rivers—chiefly at Sao Luiz and Sao Jao—and on the lower Uaupés at Trovao (Thunder). They are famous for their beautiful basket work.

CUBEO GROUP

Cubéo—A tribe with many subdivsions, most of them on the Querari river in Colombia.

In Ipanoré, Urubuquara and Jauareté on the middle Uaupés there is the Tariana tribe who belong to the Aruakian language family. They may have emigrated from the Aiari river, their language being close to that of the Baniva of the Içana. The Tukano tribes treat them as equals and because of inter-marriage with Tukana women they have almost completely lost their own language.

[2] Alcinilio Bruzzi Alves da Silva, *A Civilizaçao Indigena do Uaupés*. In connection with the Arapaços' "loss" of their language it is interesting to note that the Bulgars, formed originally from Huns and Uigures (both perhaps of Turkish affiliation) completely lost their own language and now speak a Slavic tongue.

[3] See footnote 2.

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LIVING CONDITIONS

All these tribes are primitive agriculturalists who follow a cut-and-burn routine, moving to a new patch of ground and repeating the process when the soil loses its fertility. Their main cultivation instrument is the hoe. Next to agriculture, fishing is an important source of food. They are excellent navigators and handle their canoes, which they carve out of the trunk of a tree, with great skill. Only slightly less important in their life style is hunting. This occupation is left mainly to the Makú Indians, aboriginal people who live deep in the forests. They appear to be in some kind of vassalage to the Tukano tribes and provide them with game. They also often help them in the preparation of plantations. The main crops on these plantations are manioc, bananas, pineapples, sugar cane and tobacco.

SUBDIVISIONS

The Tukano tribes are subdivided into many hierarchial groups which have been studied closely by Alves da Silva and identified as gens: they are patrilineal and patrilocal. Women have to marry outside their own tribe and because of this many families are bilingual, speaking the language of both parents. Many of the Tukanos have oblique mongolical eyes and the children have the blue mongolic spot.

RELIGIOUS BELIEFS

It is very doubtful if the tribes believed in a supreme deity called *Uake* as missionaries would lead us to think. Missionaries used the word *uake* for God but really it means bone—a thing which does not corrupt.[4] The Tukanos use sacred flutes (*posaunas*) in their ceremonies. The posaunas are connected with a culture-hero *Washti* and must not be seen by women and children. The Tukanos talk about bush ghosts or *Boraro* and their festivals (*Dabucuri*) have the character of a thanksgiving, often lasting for some days.

HISTORICAL NOTES

The origins of the eastern Tukanos may be traced to the myths of the Great Snake. These say that the Tukanos have been migrating down the River Amazon and up the Black river, finally settling on the Caiari and middle Jupurá rivers.[5] There appears to be a good deal of evidence to support this tradition. Today there are still living some of the western Tukanos who

[4] Communicated to me by Father Eduardo Lagori.

[5] Communicated to me by Father Casimir Beksta.

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originally had their homelands on the Napo river and the upper courses of the Içа and Japurá rivers, all affluents of the upper Amazon. Therefore it is quite possible that a large selection of the once solid block of Tukano tribes broke away and migrated down the Napo and Japurá, reaching the Negro and finally settling on the Uaupés and Japurá. In this connection there are interesting references about the Makú. The Makú were the aboriginal population of the area and were defeated by the Tukanos. The Tukanos, however, claim that they brought the Makú with them on their migration. It seems likely that the Tukanos did not want it known that there was a population in the area before their own arrival. The reason for the Tukano migration can only be hypothesised. Perhaps there had been internal fighting between tribes or perhaps they wanted to escape Inca or Spanish domination.

When the Spanish Commission for Frontier Demarcation entered the upper Rio Negro from Venezuela in 1759 they reported meeting a tribe named Manativitano with a chief named Cucui, but nothing about Indians who could be identified with the Tukanos. In about 1784 the Portuguese colonel Gama Lobo d'Almada had entered the Uapés river. Even before that, in 1761, Carmelite missionaries had founded the village of Santa Isabel on the middle Rio Negro. The people of this village were Indians from the Uaupés river, almost certainly Tukano. They were not distingiushed by tribal names but were called Indians from the Uaupés or simply " Uaupés."[6]

The tradition of this migration has remained alive among the Tukanos. When in 1948 Father Luis Pasinelli was transferred from Taraqua to Santa Isabel many Tukano families went with him, claiming that they would reconquer the country which in olden times had been theirs. After d'Almada, Carmelite missionaries seem to have founded at least one mission on the great rapids at Ipanoré on the middle Uaupés, and at Sao Joaquim, a little above the mouth of the river. The last Carmelite missionary, Frei José dos Santos Inocentes, sometimes visited the Uaupés between 1832 and 1853[7] and on one of them met the English naturalist Alfred Russel Wallace, a contemporary of Darwin and Bates. Wallace's accounts about his visit provide a useful source of reference to the Tukanos.[8] From 1852 to 1853

[6] A. C. F. Reis, *Limites e Demarcaçoes na Amazonia Brasileira,* Rio de Janeiro, p. 104; Dom Pedro Massa, *op. cit.*

[7] Frei José dos Santos Inocentes, Chronicles of Baptism in the Archives of the Prelature of Rio Negro, Sao Gabriel da Cachoeira, 1833-1852, Vol. I.

[8] Alfred Russel Wallace, *A Narrative of Travels on the Amazon and Rio Negro*, London, 1853.

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the Capucin missionary Frei Gregorio José Maria de Bene was working there. His narratives and maps in the Archives of the State of Amazon in Manaus and the Chronicles of Baptism in the Archives of the Prelature of Rio Negro-Sao Gabriel are precious documents regarding the Tukano tribes. He refers to the tribes of Anana, Arapassu, Jaranassú, Irariana, Juruá, Makú, Piratapuia and Tukano.[9] He was responsible for the foundation or restoration of 23 mission villages. He was forced to leave because of ill-health and in the vacuum left on the Uaupés river there sprang up to the so-called "Messianic movements." Some Indians, mostly medicine-men (shamans) proclaimed themselves to be Christ, giving leading followers names like Saint Mary and so on. These movements were suppressed by Brasilian troops because the government feared the Indians would conspire with the Colombians. In 1882 the missionary work was continued with the arrival of the Franciscans Frei Venancio Zilochi, F. M. Camioni, F. J. Coppi and F. S. Lutz.[10] They were able to restore 11 missions and the people liked them. The popularity of these four missionaries was still evident in 1907 when D. Frederico Costa visited the Uaupés. Many people remembered these missionaries and asked for others to be sent. Unfortunately the progress of this missionary work was suddenly halted. Although it is forbidden for women and children to see the sacred musical instruments of the *Washti* ritual one of the Franciscans showed the instruments in church to all the people. This action gave rise to the so-called "revolt of Jurupary" and all the missionaries were forced to leave immediately.

There follows one of the darkest chapters of Tukano history. In Bela Vista on the lower Uaupés there established themselves a family named Albuquerque from north-eastern Brazil. With the help of forced Indian labour they constructed in the wilderness a palace-like castle whose ruins can still be seen today. One member of the family, the *Manduca* or Old One, managed to be appointed "Director of Indians" and began to reduce these people to the standing of serfs. During parties for his friends which he gave frequently he often shot down Indians merely to prove how able a gunman he was. He had no respect for the Indians, he abused their women and whole families were forced to work in areas on the Rio Negro suitable for rubber production. Many of the Indians perished from disease or home-sickness. It was while in this state of serfdom that the Uaupés were found

[9] Frei Gregorio José Maria de Bene, Vols. 2-9.

[10] Livro I dos Baptismos e matrimonios dos Indios do Rio Uaupés: 1. Parte, 1881-1885, Sao Gabriel Archives; Segundo Livro dos Baptismos des Indios do Rio Uaupés, 1882, p. 274, St Gabriel Archives.

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by the German ethnologist Thedor Koch Grünberg who wrote the first scientific work about these tribes.[11] Similar observations were made by Bishop Frederico Costa who visited the Uaupés in 1907.[12] In Taraqua Indians said to him: "Help us or these men will kill us all." The Manduca's tyrannical rule lasted 15 years when he was poisoned by the Indians. His family declined and the survivors today are simple people, no different from the half-breed *caboclos* of the Rio Negro.

In 1914 the first Salesian missions appeared on the Rio Negro. For 50 years these missions flourished with three centres in Tukano country—at Taracua, at Jauareté and Pari-Cachoeira, and on the Tiquié river. The missions built large board schools, introduced professional teaching in agriculture, arts and crafts. Good results have been obtained in carpentry and basketry because these were the natural gifts of the Tukano tribes. Salesian sisters taught the girls how to sew and make blankets and other artefacts ornamented with geometric designs taken from traditional Tukano motifs.

All Tukanos today profess the Roman Catholic faith, although secretly many of the old beliefs still prevail. Christian feasts like Christmas, Easter and Pentecost are celebrated with great solemnity in the mission centres, attracting on these occasions gatherings of more than 1,000 people.

Missions also distributed food to the people because every mission had a herd of cattle.

In some ways the Salesians followed the methods of the old Jesuits who had adopted parts of their system from the Inca Empire. The Indians seem inclined to much pomp and solemn ceremony with much music and singing.

The years from 1920 to 1967 were a period during which the people flourished under a benevolent paternal system isolated from the rest of the world. Unfortunately their way of life was immediately put at risk when threatened with contact from the outside world.

CONFRONTATION WITH THE OUTSIDE WORLD

As we have seen outside contacts with the Indians date back to the eighteenth century. But these have been only sporadic episodes which did not change their cultural and national integrity. Even though the people readily accepted Roman Catholicism the "conversion" was made without a deep and profound conviction.

[11] Theodor Koch-Grünberg, "Zwei Jahre under den Indianern," *Reisen in Nordwestbrasilien*, 1903-1905, Berlin, Vol. 2.

[12] Dom Frederico Costa, *Carta Pastoral*, Fortaleza, 1909.

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The only people the Indians had had real contact with was the Salesians. There is no doubt that the Salesians and Mary Help of Christian sisters taught the Portuguese language in the three boarding schools. Most children already spoke two languages—those of the father and mother—and now they were taught a third. The Salesians, unlike the Jesuits, felt themselves to be the representatives of Western, better still, Latin, civilisation and not a few of them considered the Indian languages as primitive. There were only a few, but noticeable, exceptions: Fathers Marchesi and Giacone. The latter, being an able ethnologist, wrote four grammars and dictionaries as well as a catechism and a schoolbook in the Tukano language. Two Bavarian missionaries, Father Maltan and Sister Caterine, have a good knowledge of this language. Both are over 75 years of age. They still teach women and children in Tukano and even speak better Tukano than Portuguese. The monumental unfinished work on the Tukano by Professor Alcinilio Bruzzi Alves da Silva will give a detailed account of the Tukano Indians. It is a strictly scientific work and already runs to three volumes. Father Eduardo Lagori, who also has a good knowledge of Tukano, has fought for 40 years for the advancement of the Tukano people—but, as he calls it, advancement in their own sphere. He has translated large parts of the Bible and the Mass and celebrates the Mass and reads the Bible in Tukano. The Tukano like him and they have adopted him as a member of their tribe with all due ceremony. Despite this most Salesian missionaries—except Father Maltan—as well as the Xaverian Fathers on the Colombian side of the Papuri river are opposed to him. Still more he finds opposition from other tribes. The Tukano language has been favoured by the Salesians who are able to speak the language and this causes dissatisfaction among the other tribes. They have asked Father Lagori to say Mass in their languages but he was unable to learn enough of the languages to do so.

Children have been treated very well in the mission schools where they generally experience a higher standard of living than in their own families. When they leave the schools the children return to their villages with new ideas and costumes not easily understood or accepted by the old generation. This has resulted in the destruction of the old common-houses and the erection of many, but small, settlements along the rivers.

The Indians already had their own simple form of agriculture. They knew something about keeping the ground fertilised by providing humus and this provided an ideal ground for plantations of bananas, sugar cane and pineapples. But the expansion of agriculture so much desired by the Salesians has not been achieved. The Indians will only plant what they need for their

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own food and for exchanging with the missions for things like hoes, bush knives, axes and clothes which they cannot produce themselves.

All three mission centres have airfields built by the missionaries with Indian help. They are visited regularly by aircraft of the Brasilian Air Force (F.A.B.) This has proved very beneficial and the combination F.A.B.-missions-Indians is working well.

Unfortunately not all outside influences are beneficial. In Manaus, 1,500 kilometers from Tukano country, the Salesian sisters have two big colleges. Tukano girls have often been sent to these houses to help with the cooking and washing. Even though the sisters are very careful to help the girls they are receptive to new impressions and ideas which are changing their outlook as a consequence. This change in outlook is now going so far that the girls deny their own background and call themselves "Brazilians" rather than Tukano. Fathers Eduardo and Martin have pointed out that these girls have difficulty in finding a husband when they return home because the people do not think they are very nice girls.

Naturally there are many positive elements in the Tukano's changing world. The daughter of the chief of Urubuquara treated her paralysed mother for more than a year with all the care and love of a good child and afterwards looked after her father in the same way.[13]

When the late bishop, Dom Pedro Massa, opened a pedagogical school in Santa Isabel in 1963 for young girls to be trained as native teachers there were also enrolled some girls from the Tukano tribes. They easily reached graduation and afterwards taught in the boarding schools, living with the sisters. They are good teachers because of their ability to communicate with pupils of their own people. Unfortunately the teacher school was only for girls. These received an education superior to other children and then found themselves isolated from their own people. They, too, were unable to find a husband of the same educational level. Through living with white and *caboclos* girls they adopted such customs as painting their lips and nails and dressing in mini-skirts and slacks.

One girl who has set a good example is Madalena, daughter of the chief of the Desano village Sao Jao on the middle Tiquié. Assisted by the authority which her father's position

[13] Another girl who set a fine example was Ignatia. Orphaned as a child she received her education from the sisters. She worked well, cooking, making dresses and blankets, and gardening. Later she married a good carpenter, Carlos Nery, of the Piratapuya tribe, being herself a Tukano. Sadly, she and her first baby died in childbirth in 1963.

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carries and with material help from the mission, she is running her own little bush school.

The movement of these people is having a dangerous effect on the conservation of their culture. Some are going north to Colombia and others down the Rio Negro, settling at and around Santa Isabel. They are isolated from their own tribal organisation and traditions, absorb elements of *caboclos* culture and finally intermarry with non-Indians. Father Schneider, who speaks three Indian languages and at 73 is still working and visiting villages, knows of only one case of a white woman marrying a Tukano man. The daughter of this union looks like a white girl. Generally, however, it is white and *caboclos* men who marry Indian women.

Other Indians living on some of the tributaries of the Rio Negro, such as the Curicuriari, Marié and lower Cauaboris, are isolated not only from their own people but also from the *caboclos*. Often they have deserted their own home villages because of internal conflicts.

In a sad condition are 100 or so Indians who have moved to Manaus. Because they do not have a culture to hold on to their morale is dropping rapidly. One of these Indians, who had been my own pupil in Pari-Cachoeira in 1960, had become an able mechanic on an aeroplane of the Cruzeiro do Sul company, flying to Georgetown, Guyana. Unfortunately his inexperience led him into smuggling and he had to leave his work. He spent two years in reduced circumstances before he was restored to his own job. Another took to stealing and drink. That he did not decline completely is due to Father Beksta who engaged him to assist in a study of the Tukano language. A result of these studies is a very good Tukano translation of the Gospel of St Mark. Another Indian, Frutuoso, is an able assistant of Father Ingenieur Herzberg in the Manaus meteorological station. Unfortunately, he has not married and, sometimes, likes to drink.

Dom Joseph Domitrovitsch, the late bishop-coadjutor and founder of the mission of Pari Cachoeira, has always been a champion of the Tukano. He discouraged emigration, giving the people the opportunity of acquiring necessary goods by exchanging their own products in the mission centres. He was always careful to respect their traditions, such as banning marriage within their own tribe, and rejected the offer of ambitious politicians to give them voting rights. He held the view that it was enough if so many tribes were living together in peace. He felt that an electoral system would only destroy their monarchial forms of chieftainship and introduce political feuds which would provide no benefits and be even dangerous for the people.

Unfortunately things changed after the resignation of Dom

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Pedro Massa in 1966. New and unsuitable ideas originating from interpretations of Vatican Council II were entering the scene. Thus, in many villages new chiefs have been elected without consideration of the legitimate heirs to these offices. Old monarchial traditions have been broken down in favour of a dubious "democracy." Many Indians became electors despite the fact that they did not understand the white man's way of life.

Solemn celebrations during a feast at one mission have been abolished. Reaction followed swiftly: the Indians reverted to their old ways of holding their own feasts at which they drank *caxiri*, an alcoholic drink prepared from the juice of manioc and sugar cane.[14]

The arrival of transcontinental highway workers from outside the Rio Negro brought difficult new problems. The difficulties will become even more wide-ranging if the work of R.A.D.A.M., a research project for mineral resources, proves positive. The State Service of Indian Affairs (F.U.N.A.I.), set up only two years ago, has little experience and shows little interest in the Indians. Among its functions is the rapid and final integration of the Indians. Another is the creation of Indian parks where Indians would be reduced to little more than a tourist attraction—like animals in a zoological garden. The representatives of Catholic and Protestant missions—united on this subject—are in favour of the gradual incorporation of the Indian in the "Great Brazilian family." No common stand was reached at a conference in Manaus in April 1975.

It is deplorable that there has been no proposal for promoting Indians as a people in their own right. Jesuits have done this in Paraguay and Rio Grande do Sul with excellent success. They have treated Indians as people different from Whites, giving them advantages in their own sphere. When, after the extinction of the Spanish Hapsburgs, liberal reformers like Pombal and Aranda began to destroy these peoples, they were going the same way as those who today want to destroy the Bantu homelands in South Africa. The chief error is to see only individuals in a country and destroy ethnic groups as a living unity. The proposal of Dr Gayre of Gayre[15] for settling the Rhodesian problem could be an excellent framework for settling the Indian problem in Brazil.

[14] One exception is the Taraqua mission where Brother Thomas Hanley, with help from the United Kingdom, Ireland and the U.S.A., is holding the mission together and maintaining traditional standards.

[15] R. Gayre of Gayre, "The Dilemma of Inter-racial Relations," THE MANKIND QUARTERLY, Vol. VI, No. 4, April-June 1966, pp. 183-201.

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Intelligence: The New Phenomena

By DESMOND TARRANT

A Review of *The Evolution of Intelligence: a General Theory and Some of its Implications*, by David Stenhouse. George Allen and Unwin, 1974. Pp. 376. Price £5.25.

David Stenhouse has degrees in both zoology and philosophy and has taught in zoology and psychology departments in several universities in Australia and New Zealand; since 1966 he has been working in educational philosophy at Massey University, New Zealand, where he is a Senior Lecturer.

A point to note is that instinctual behaviour is *inherited;* it is due to " the hereditary blueprint contained in the genome and not the environmental circumstances indispensable to its realisation " stresses the author quoting Lorenz (*Evolution and Modification of Behavior*, University of Chicago Press, 1965). Intelligent behaviour is behaviour which is adaptively variable within the lifetime of the individual.

In dealing with the way intelligent behaviour has evolved from the instinctual, the author points out that " intelligent behaviour depends upon . . . this withholding or procrastinating factor (P-factor) without which the abstracting and generalising factor (A-factor) and the " memory store " (C-factor) would be quite unavailing " (p. 67). Another important factor is the D-factor (p. 84) which stands roughly for the animal's aim in life, short or long term: selection pressures from the environment seem to have favoured this factor in the early phases of human evolution. So, in the interest of survival, it is good if not essential to have a sense of purpose or direction individually and collectively as observed by Dr Frankle in the Nazi concentration camps (*Psychotherapy and Existentialism*, Viktor E. Frankle, Pelican Books, 1973).

In dealing with Intelligence and Creativity (p. 103), David Stenhouse notes that what distinguishes the real-life creative is the ability to see significance in his experience, unity within diversity, the inter-connections. This seems to strengthen greatly the case for imagination and symbolic mysticism. All this is based on the ability to perceive similarities and differences, the abstracting or A-factor of the four factors of Intelligence. The author notes that " Rejection of the current orthodoxies is the first, the most difficult, and the most essential step towards innovation, creation and discovery " (p. 106).

The postponement factor, the P-factor, is seen as vital in the change from an instinctive response to an intelligent or cognitive one.

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The author then examines the complex field of intelligence testing and creativity. Creativity emerges as a self-testing and self-correcting activity whose reward is knowing one's own worth with a resulting bonus of self-confidence rooted in understanding, Carl Jung's alternative to both belief and disbelief.

The author traces the race history of intelligence both in animals and humans to establish the emergence of his four factors of intelligence from the instinctive: the withholding or P-factor is always important as, for example, in the development of speech. At this point (p. 185), the author notes: "The key assumption in all this must be, that just as intelligence has emerged in the past to exert a decisive effect upon human evolution, so it can continue in the future, *given the right conditions, the appropriate mechanisms,* to lead the human species past the blind alleys of instinctual specialisation and the death-trap of behavioural disintegration."

The latter part of this book deals with wider questions of intelligence and social survival for which individual and collective adaptability, especially of institutions, is vital (p. 237). The P-factor, again, is essential for breaking dysgenic habits, i.e. ones operating against both survival and further evolution.

In dealing with Educational Systems, the author notes (pp. 273, 274): "There are grounds . . . for believing that current academic assessment procedures (notably examinations supplemented by personal reports) tends to discriminate against high P, and diverger and non-conformist individuals . . . these are the types . . . who can perform most effectively the most vital function of education, of transferring the orientation of their pupils' reactions from the instinctive to the intelligence systems."

In Chapter XI, entitled "Instinct, Intelligence and Learning Theory", is posed the question (pp. 287, 288): "Why *should* there be a sudden change from an instinct to an intelligence system?" The emphasis in the preliminary observation seems vital that "The supposition that it could be due to random genetic changes would appear really to be little more than an assumption of 'miraculous intervention,' since the number and extent of the changes necessary would appear to have an improbability of a vast order of magnitude."

The author believes there to be a direct inter-relationship between instinct and learning: he says (p. 301): ". . . there is a dynamic inter-relationship between learned and innate components." This blend leads to adaptation. The innate instincts have what he describes as an "innate schoolmarm function" guiding what is learned so that it is adaptive. Now, what is responsible for this "innate schoolmarm function"? Where does it come from?

The author postulates a gap-creating mechanism in the genetic

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code. This would be his P-factor, the tendency not to respond instinctively but to think over one's course of action. He writes (p. 309): "Learning is in itself basically an instinctive activity . . . at the mercy of instinctual motivation. It is only intelligence which, by the operation of P-factor inhibition of instinctive mechanisms, can cut across the 'tide and flow' of motivation."

Rounding this out, we find (pp. 323, 324): " . . . the P-factor and other factors both of intelligence and instinct can be developed, during evolution, to a great extent independently. Once they have reached a sufficient level of development they can . . . be put into conjunction . . . act in concert and be mutually reinforcing." The author notes that the new factor of intelligence opens the way to great evolutionary changes as the psychosocial supplements, or even at times replaces, biological evolution.

Although its vocabulary is necessarily sometimes specialised, the style of this book is lucid; it has verve, cogency, and persuasive logic, which makes exciting reading as we follow this vital trail.

The latest findings of depth psychology show the aim of life to be to bring men and women to their true inner Selves. Here we find what Hamlet called the Divinity which shapes our ends, the Supreme or highest Intelligence.

As we sweat out our time under the schoolmarm, in Earth's primary school or kindergarten, always determined to learn the hard way, feeble, finite, fallible, and frequently two-faced, we can take heart and hope from the fact that—the higher the Intelligence, the higher the Purpose.

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Some Personality Correlates of Behavioral Rigidity

By HENRY H. REITER

Kounin (1941) and Luchins (1942) reported studies on rigidity on different levels: sensory, motor, and conceptual. Most of the previous articles on rigidity revealed that it was a complex concept and that it was a maladaptive factor in task performance.

The present study used a measure of rigidity, the Test for Behavioral Rigidity (T.B.R.) and attempted to relate it to certain personality variables, as measured by the Guilford-Zimmerman Temperament Survey. Breskin and Gorman (1969) and Gorman and Breskin (1968) reported data for the T.B.R. indicating its relationship to rigidity.

METHOD

Forty-nine male and female undergraduate students in an introductory psychology course at C. W. Post College served as *Ss*. They were given the T.B.R. and Guilford-Zimmerman Temperament Survey during regular class meetings. *Ss* were awarded extra credit for their research participation.

The T.B.R. provides three dimensions of rigidity: motor-cognitive, which refers to ability to shift from one activity to another; personality-perceptual, which measures ability to adjust readily to new cognitive and environmental demands; and psycho-motor speed, which provides a measure of ability to spontaneously recall cognitive responses.

The Guilford-Zimmerman Temperament Survey is an objective personality inventory which measures the following variables: General Activity (G); Restraint (R); Ascendance (A), Sociability (S); Emotional Stability (E); Objectivity (O); Friendliness (F); Thoughtfulness (T); Personal Relations (P); and Masculinity (M).

RESULTS AND DISCUSSION

Pearson product-moment correlation coefficients were computed between raw scores on the T.B.R. and on the Guilford-Zimmerman personality scales (see Table 1).

Note that only six correlation coefficients significantly differed from zero out of a possible 30. Only two could be expected to be significant by chance alone.

Both the R and O scales of the Guilford-Zimmerman significantly correlated with all three measures of the T.B.R. This indicates that only Restraint and Objectivity significantly

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relate to the dimension of flexibility, including ability to shift from one activity to another and ability to adjust to new environmental demands. Thus, those *Ss* who score high in self-control (R) and objectivity (O) are more flexible (or less rigid).

The results appear to be consistent with the psychoanalytic view of rigidity (Shapiro, 1965) wherein lack of control is seen as being related to rigidity. In addition, a study reported by Langer and McKain (1964) which indicated the relationship between the flexibility-rigidity variable and structural-objectivity, as measured by the Rorschach tends to corroborate the present findings concerning the relationship between flexibility (T.B.R.) and objectivity (Guilford-Zimmerman).

TABLE 1

Pearson product-moment correlation coefficients computed between measures of T.B.R. and Guilford-Zimmerman Scales, N = 49

Guilford-Zimmerman	*M.C.R.*	*P.P.R.*	*P.M.S.*
G	—.03	—.08	.14
R	—.31*	—.29*	—.29*
A	—.21	—.01	—.18
S	—.10	.04	—.06
E	.09	.18	.17
O	.29*	.34*	.30*
F	.16	.18	.18
T	—.14	—.09	.04
P	.04	.19	.04
M	—.06	.19	.11

* $p > 0.05$.

Limitations of the present study are chiefly due to lack of demonstrated adequacy of the T.B.R. Reliability data are lacking, although it has been crudely estimated through consistency of factor analytic data. In addition, Breskin, Gorman and Hochman (1970) indicated that the T.B.R. correlated negatively with another measure of rigidity, the Breskin Rigidity Test thereby suggesting that validity of the T.B.R. is questionable.

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Scientific Abstracts

Edited by R. H. S. ROBERTSON

DEMONSTRATION AND IMPLICATIONS OF LYSOZYME AND IMMUNOGLOBULINS IN HUMAN EAR WAX

Nature, Vol. 229, 8 January 1971

Human cerumen (ear wax) occurs in two phenotypic forms, wet and dry, believed to be controlled by a single pair of genes in which the wet allele is dominant over the dry. Mongoloid peoples, including American Indians, characteristically have high frequencies of the dry allele, whereas among Caucasians and Negroes the wet allele predominates.[1-3] Although no reason for this genetic dimorphism has been found,[4,5] the extreme variations in frequencies of the two alleles among human populations suggest some adaptive value, possibly with respect to disease resistance.

* * *

Antibody studies were made using immunodiffusion techniques[10] set up with cerumen suspensions and with IgA and IgG antibody.

* * *

When grouped according to the racial background of the subjects, the results indicate that although lysozyme was present in most subjects with the dry type ear wax, there were distinct differences in the frequency of the enzyme positive reaction in wet cerumen among the racial groups (Table 1). These were Negro 45.1 per cent positive, Caucasian 32.5 per cent positive, and Chinese 18.6 per cent positive. These differences were statistically significant ($P < 0.01$-0.001, 2 d.f.). In a subsample of 74 wet and 10 dry specimens, immunoprecipitin tests revealed IgG anti-body in all 10 dry cerumens, and both IgG and IgA antibody in one wet type. Attempts to demonstrate the presence of inhibitors of lysozyme in cerumen samples absent in enzyme activity with this assay were negative.

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TABLE 1

Frequency of occurrence of lysozyme in wet and dry cerumen among Caucasians, Chinese and Negroes

Groups	*Cerumen type*		*Lysozyme present*	
			No.	*per cent*
Caucasians	Wet	(363)	118	32.5
	Dry	(5)	5	100.0
Chinese	Wet	(70)	13	18.6
	Dry	(99)	83	83.8
Negroes	Wet	(51)	23	45.1
	Dry	(0)	0	0

Number of subjects examined appear in parentheses.

* * *

Recently McCullough and Giles[13] suggested that the anthropological variation in cerumen types might be related to relative humidity and its selective influence through different rates of external ear canal infection in the two types of cerumen, and that cerumen type might be associated with altered resistance to external otitis. This agrees with our findings of an antibacterial potential of dry cerumen. Severe complications are very rarely associated with external otitis,[14] however, but commonly follow otitis media, a significant medical problem in American Indians.[15] Studies by Gregg (personal communication) in Sioux Indians indicate no significant difference in the rate of external or middle ear infections associated with cerumen types. It is, however, also possible that the cerumen dimorphism is a manifestation of a pleiotropic gene which affects other systems of resistance to infection.

This research was supported in part by a U.S. Public Health Service grant from the National Cancer Institute and by a gift from Viola K. Schroeder in memory of Walter Schroeder.

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Book Reviews

PASSAGE TO ARARAT

By Michael J. Arlen. Farrar, Strauss and Giroux, New York, 1975. Pp. 293. Price $8.95.

This impressionistic book by the son of the popular British Armenian writer of the Twenties, Michael Arlen (*né* Dikran Kouyoumjian), is a narrative of travel on one level, an exploration of Armenian history on another, and a discussion of the psychological aspects of genocide on a third.

Michael J. Arlen had an ambivalent attitude towards a father who consistently ignored his Armenian heritage and sought to appear completely British. The father's attitude seems to have been an expression of the sort of self-hate which members of powerless persecuted peoples often develop when they unconsciously identify with their persecutors.

"Who still talks today about the extermination of the Armenians?" Hitler once asked rhetorically. The persecution occurred in two waves. The first, under the paranoid Sultan, Abdul-Hamid, involved the bestial massacre of an estimated 300,000 Armenians in actions initiated by the armed forces and carried out by the Turkish *hoi polloi*. Often "priests and schoolteachers had clearly been singled out beforehand for special attention, of which death by hanging was not always the unkindest form" (p. 177). Although these atrocities occurred in a remote corner of the earth, they aroused the indignation of a civilized world which had not yet been anaesthetized by Auschwitz, Dresden and the Gulag Archipelago. Clemenceau characterized the Sultan as a "monster" and the 86-year-old Gladstone called him "the Great Assassin."

Twenty years later, the Young Turks proceeded to exterminate the rest of the Armenian population. Being revolutionaries, they did this with more thoroughness and savagery than the effete Sublime Porte. Men, women and children were starved and cudgelled to death. Bodies were slashed open, breasts cut off, skulls broken, fingernails torn out, nails hammered into feet. The survivors were starved in concentration camps, then marched endlessly without medicine or food under military guard. En route, they were handed over to Kurdish and Turkish peasant mobs to be enslaved, raped, butchered or all three. In the 1915-16 genocide, over half the Armenian population of Turkey, or about a million people, was slaughtered.

The obvious analogy is with the extermination of European Jewry. Both Armenians and Jews were peoples with their own language, culture, religion, history, institutions and physical appearance whose traditional homelands had been conquered by more primitive stocks.

In each case, the victims were people whose average ability was markedly higher than that of their persecutors. The Armenians contributed highly skilled craftsmen and artists, moneylenders, bankers and financial experts, businessmen, traders, professionals and administrators. Before the Ottoman Empire degenerated, it was ruled by Sultans who were almostly entirely Christian by birth,* defended by an élite force of Janissaries recruited from Christian peoples, administered by Greek Phanariots and Janissaries,

* The mothers of the Sultans were slaves and by Koranic law only those born infidels could be enslaved. Hence, all mothers of Sultans were of infidel, generally Christian, birth. The proportion of Turkish blood in the veins of any Sultan was $(2)^{-r}$, where r is the number of predecessors the Sultan could boast. Thus, the 10th Sultan in a dynasty would be 1/1024th Turkish by blood.

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and endowed with artists, writers and savants who were also of alien stock. The Turks and Kurds served as peasants, herdsmen and foot soldiers. They paid tribute, tilled by traditional methods and cut throats.

The usual interpretation of the persecution of able minorities—Eurasians, Chinese in Indonesia and Indians in southeast Asia, for instance—is that they are hated because they are tax collectors, small tradesmen and money-lenders—exploiters of the masses.

I believe the more basic reason is that they are hated because they are envied and they are envied because they are more able than the peasant peoples among whom they live. This hatred becomes persecution and genocide only when the economic privileges of the élite group are not matched by corresponding political and military power.

One of the fundamental factors determining the severity of the persecution is the ability and civilization-level of the persecutors. The fury unleashed against the Armenians was much more savage than what the European Jews endured. The engine of Jewish genocide was a largely impersonal death machine. Even so, draconian measures were taken to conceal the crime from the German people. The extermination camps were mostly located in Poland. The death camps, the *Einsatzgruppen* and the lynch-mobs were manned in the main by Slavs, and less frequently by either Germans or Hungarians. In the case of the Armenians, however, the genocide was one of the most bestial and sadistic face-to-face confrontations in modern history. Little effort at concealment was made. The slaughter was apparently done, not only willingly, but enthusiastically, by entire Turkish rural communities.

As a young man, the philosopher of history, Arnold J. Toynbee, assisted Lord Bryce in compiling a harrowing and exhaustive report on the 1915-16 massacres. These events may well have influenced Toynbee's subsequent conclusion—one which I believe has never received the serious attention it deserves—that civilizations are destroyed by the combined action of their internal and external proletariats.

NATHANIEL WEYL

RACE AND I.Q.

By Ashley Montagu. Oxford University Press, 1975. Price £2.00.

Since Professor A. Jensen put the cat among the pigeons in his famous *Harvard Educational Review* article, in which he discussed in some detail the evidence for the inheritance of intelligence, and suggested in two brief pages that possibly genetic differences between races, particularly American Blacks and Whites, might also to some extent be inherited, there has been a plethora of books and articles trying to controvert his claim. Practically all of these books have been factually misleading, politically motivated, and useless from the point of view of the disinterested scientist eager to discover the facts.

This book pretends to deal with the topic which forms its title, but the reader must not be mislead into thinking that this set of reprinted articles constitutes an unbiased, scientific examination of the arguments for and against the hypothesis that genetic factors contribute in some measure towards the differences in intelligence found between different races. It is simply a collection of arguments against Jensen's hypothesis, slanted in a rather virulent manner so as to make it quite impossible for the reader to discover what Jensen said, or how he would counter the arguments presented. To the connoisseur, however, the book is a goldmine of information on how to bias arguments, construct and destroy men of straw, disregard your opponent's strongest points, and steamroller the reader into submission to a false conclusion. Let us look at just a few examples, taken at random.

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Montagu states that " it should not be surprising that there have been and continue to be significant differences in the achievements of Blacks and Whites as ' measured ' by tests which have been arbitrarily standardized on middle-class Whites." Now I do not know how you can " arbitrarily " standardize a test; the procedure is well laid down, and every single test I know has been standardized on reasonably representative samples of the population, containing a proper proportion of working class children; not one has been standardized on middle-class Whites. The writer argues that because the tests are constructed by Whites, therefore other races are placed at a disadvantage. How does he explain that Eskimoes, living under natural conditions, have I.Q. scores as high as white Canadians, and higher than Irish, or Portuguese, or Spanish children? Or that Oriental children do better than white? He refuses to even mention these (and many other) facts, in order to retain his superficially convincing point. Montagu states that Jensen (and I) claim that intelligence testing *should* lead to an intellectual caste system; this is simply untrue, and of course there is no effort made to substantiate the claim. Montagu makes quite unfounded claims, grossly exaggerated, of the success of such experiments as the Milwaukee Project to raise the I.Q. of the children who took part by environmental manipulation, without mentioning the severe criticisms which have met these claims. And so one could go on; there is an endless list of mis-statements, untruths, and distortions.

To readers seriously interested in this topic I would suggest a salutary exercise. They might like to read my book on *Race, Intelligence and Education*, and then read through Montagu's book, noting the facts which I consider to be particularly telling in defence of Jensen's thesis, and also noting whether these have been mentioned or answered in *Race and I.Q.* Such an exercise will tell him more about the nature of this controversy, and the unscrupulous way in which his enemies have attacked Jensen, than anything I can say. But simply as a hopefully " impartial " statement of the facts, this book is worse than useless; it insults the intelligence of its readers.

H. J. EYSENCK

THE BIOLOGY OF GOD

By Alister Hardy. Jonathan Cape, London, 1975. Pp. 238. Price £4.50.

Sir Alister Hardy has a great deal of experience in using the scientific method and in this book he is applying it to the primordial problem of man's religious sense.

What are we really doing in our religions—are we manufacturing illusions to persuade ourselves that there is no death and oblivion or are we making contact with a force that can take us safely beyond life as we know it here? It is only today that we are really beginning to think objectively about this, and Sir Alister Hardy is one of the foremost pioneers in this field.

After describing his scientific approach to this emotional subject, the author claims to be a Darwinian accepting natural selection and adaptation as key factors in the now-established theory of evolution, selection being the key to the physical side of evolution. Whereas this seems to many to indicate merely a material process self-perpetuating and requiring no directing power, Sir Alister sees further and notes (p. 35) that behaviour is a vitally important feature of the whole process, that consciousness is an important factor in evolution and these points take us beyond a merely material activity. This view seems to verify Arnold Toynbee's hypothesis that civilisations survive in proportion as their motivations are spiritual and altruistic.

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On page 87, discussing religion in the making, the author describes a "something" in our make-up which represents a divine reality behind the multitudinous manifestations of ordinary daily existence, and he quotes what Aldous Huxley called the Perennial Philosophy; this includes "the ethic that places man's final end in the knowledge of the immanent and transcendant ground of all being. . . ."

I believe this concept of immanence, the indwelling of the Creator within everything created, to be the hypothesis which gives the greatest intelligibility to most of our evidence of human experience. In today's terms, this immanent driving force is expressing itself through countless millions of brains, animal and human, every single one of them being a computer programmed from birth to death: the individual feeling of free-will is entirely subjective in a process of individualisation leading to Self-knowledge, this Self being the immanent or indwelling Creator engaged in projecting a film of unbelievable complexity involving the Sun and Earth and the Ionisphere as a kind of vast valve or television tube in a process of cosmic television.

This concept of Immanence seems the only one sufficiently comprehensive to allow for the materialistic machinery and the findings of mystic and imaginative or spiritual insight — to explain both the insect and Beethoven.

Sir Alister, in describing our Wordsworthian feeling for nature stresses (p. 96) that this apparently solid nature is really only whirling particles or waves of energy. "It is the picture produced by the rays of light focused on the retina—and modified in the brain—that we see, not the outside world as it really exists. . . ."

After dealing with the relationship between psychology and religion, Sir Alister tackles the paradox of parapsychology. Under this heading, he includes extra-sensory perception (E.S.P.) incorporating telepathy, clairvoyance and pre-cognition. He also refers to psychokinesis, the alleged influence of the mind on physical objects.

In his chapter, "Towards a New Natural Theology," he author states (p. 211): ". . . I believe the Divine spirit—the spirit of life—the *en theos* —the *élan vital*, call it what you will—brought about the organic evolution through the action of Darwinian selection."

Finally, he recommends an experimental faith using prayer to acquire or release fresh rejuvenating energy. I must admit to finding this difficult —the Maker seems to delight in playing cat and mouse with humanity, but for those who have the humility it may very well work wonders as Sir Alister claims. He concludes that the systematic study of the experience of God can prepare the ground for a religious faith in harmony with the true spirit of science, doing real justice to man as the *religious* animal. He regards this new approach as vital to appease the frustrations of our now spiritually bankrupt civilisation.

DESMOND TARRANT

IN SEARCH OF SERENITY: A GUIDE TO SUCCESSFUL MEDITATION

By Harold Kampf. Tavistock Publications, London, 1974. Pp. 63. Price £2.50.

Many are today in these troublesome times drawn to meditation. The author writes in non-technical language on thought control. He shows that in meditation there is much common ground between Christianity and Eastern faiths. He points out, as is no doubt true, that meditation for only 20 minutes a day gives sharper memory and increased alertness (p. 15). This book explores the Christian mystics, meditation and contemplation from Moslem to Buddhist, Hindu and Tibetan religions.

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OBEDIENCE TO AUTHORITY

By Stanley Milgram. Tavistock Publications, London, 1974. Pp. 224. Price £2.50.

I doubt very much if " a period of several weeks is spent [by the army recruit in basic training. Although its ostensible purpose is to provide the recruit with military skills, its fundamental aim is to break down any residues of individuality and selfhood " (p. 181). The training is to give the recruit a knowledge of the highly technical problems he has to face and, in so far as there is drill, it is for ease of handling masses of men.

This book is aimed at America's conduct of the Vietnam war, use of napalm and the like. It is not, therefore, an entirely objective work, despite the paeons of praise heaped upon it by the professor of social psychology at Harvard and the professor of psychology at Oxford.

MANIPULATION

By Erwin Lausch. Aidan Ellis, Henley-on-Thames, England. Pp. 228. 33 illustrations. Price £3.60.

The American scientist J. A. Wada has observed that in premature babies the left temporal lobe is usually larger. This is the area to do with language (p. 48). A leucotomised person (one who has had surgery on the frontal lobes) is usually carefree. He fails to grasp complicated problems and he makes no plans for the future. He lives in the present (p. 99).

The great dangers of these researches is stressed and how by manipulating the brains of human beings, especially by electrodes placed in the brain, the fact that dictators could easily control population is by no means as remote as it seems.

Dr Lausch points out that any living creature can learn only within a framework determined by hereditary factors: " This idea is confirmed in practice if the learning capacities of different animal species are compared to each other: limits of capacity depending on the species are clearly recognisable (p. 258)."

RITUAL AND KNOWLEDGE AMONG THE BAKTAMAN OF NEW GUINEA

By Frederick Barth. Universitetsforlaget, Oslo, and Yale University Press. 1975. Pp. 292, 19 plates. Price N kr. 74.00.

The Baktaman are a nation of 183 persons living in the mountain rain forest in the middle of New Guinea. They are very little influenced by the outside world. They speak the Seltaman dialect of the Faiwol language and know no other tongue. In their dialect they can communicate with about 1000 people.

Prayers are addressed to ancestral relics and are brief and repetitive. There is belief in spirits of various grades. Their territory is strictly delineated and they resist the encroachment of others. Menstrual huts are placed on the ground and menstruating women must not enter other homes. The men have houses which are forbidden to the women and children, and which are built well off the ground.

Numerals beyond three or four are very rare in spontaneous speech, but they can go up to 27. They do not know the number of days in a full moon, for instance, and are unaware of the year. The women are kept in ignorance of religious truths. The religion is a communal cult run by men, but not a male cult. Sexual intimacy does not take place in huts as rigid segregation occurs, but in the forest. The penis-gourd is worn by the men. They are also cannibals.

This is a very thorough study of the Baktaman people, of which we have merely touched upon some points to give their location and characteristics.

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RACIAL KINSHIP: The Dominant Factor in Nationhood

By H. B. Isherwood. The Racial Preservation Society, Ladbroke, Warwickshire, England, 1974. Pp. 35. Price 30p (paperback).

Naturally, anything from the press involved must take a consistent line on the racial question. Nevertheless, anything from the pen of Mr H. B. Isherwood must command scholarly respect. He rightly attacks the pro-Marxist leanings of the World Council of Churches and the general leaning of much publicity in Britain today. However, in this connection we have the feeling that a change is beginning to occur. In a new climate much that has been smeared may well be possible to be objectively discussed in the not distant future. In dealing with "Race" he quotes the recent book by Dr John R. Baker, Oxford, and in so far as he does he is on firm ground.

In passing he makes clear, as is so often overlooked, that Charles Darwin was not an atheist.

The decline of European man, even in Russia, has given cause for alarm, and the theories of Malthus are unfortunately being proved all too relevant in our times when we are being swamped by the growth of population—and from the third world.

The author seems to be on firm ground when he quotes Professor R. Ruggles Gates on the fact that mankind is the product of more than one species. Professor Coon has said much the same thing in bringing man from different stocks arising at different times.

In dealing with the I.Q. he cites Galton, Burt, Jensen, and others, and holds that there is a wide difference between the Negroid and the Caucasoid.

Towards the end of the book he deals with the Jews by way of illustration. Here he is on less well-assured ground. For instance, he takes up the usual stance of the Jews being of Bedouin origin. This is, in fact, not correct, as the Abrahamic clan was of northern origin, related to the Habirru, mentioned in the Hittite realms, and with the God Jaweh, and undoubtedly of Nordic and Aryan origins. Later, adulteration did occur, but the two strains can still be perceived in Jewry—the Nordic on the one hand and the Armenoid on the other. Even this latter is not Bedouin in type. As a consequence, the current struggle in which Israel is engaged is in fact largely a racial one as well—surrounded as she is with people who are largely eastern Mediterranean, with, in some of them, such as the Libyans, not a little Negro. The only point of contact between them is that both sides speak a Semitic language.

He touches on the controversial millions destroyed in the gas chambers of Nazi Germany (six million) and Gypsies (three million). While I have no doubt this is an exaggeration, there is no denying that a large number of Jews, Gypsies, and others, were destroyed in the concentration camps. Some of his interpretations of Jewish history would be controverted by Mr Nathaniel Weyl. I think that, on the whole, the Jews do not display oriental characters at all. What oriental group has their flair, other than is derived from the Armenoid race? The Armenians, Jews, Parsees, and to some extent the Parsees, have characters all in common—and so had the ancient Sumerians. But all these are Armenoids, and not Oriental. They also are found further west wherever we have pockets of Armenoid stock.

I am inclined to agree with the writer that the social amalgam being made in Britain, and other countries, today, even if the races do not readily mix by cross-breeding, is a sign of racial degeneration.

It is a small book, but there is much in it of interest, and it is stimulating of thought to read.

R. Gayre of Gayre

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PARAPSYCHOLOGY AND THE NATURE OF LIFE: A SCIENTIFIC APPRAISAL

By John L. Randall. Souvenir Press, London, 1975. Pp. 256. Price £4.

John L. Randall has published many papers and has been a visiting Research Fellow at the Institute of Parapsychology, North Carolina, and at present lectures on biology at Leamington College.

Against the mechanistic view emerging from Darwin's ideas was the view of Professor Sidgwick (who prophesied what would arise from it) and much later Dr Albert Schweitzer (pp. 57-58). This has led to the *existentialist* vacuum (p. 59). Jung has drawn attention to the great loss sustained by man through the destructive effect of science on religion (p. 61).

The writer points out that " The Overwhelming mass of evidence then, both from spontaneous happening and from laboratory research, strongly suggests that E.S.P. is independent of space time and matter " (p. 92). Eysenk has shown that extroverts are able to score higher in E.S.P. than introverts (p. 102).

Eysenk is not the only scientist to believe in E.S.P. There was also Sir Cyril Burt.

When the doctrine of neo-Darwinism is examined it is found to be quite deficient, as has been exposed by de Beer, Alister Hardy, Thorpe and others. This is also clearly seen by Waddington and R. E. D. Clark.

" There is no good reason to accept the dogmatic assertions of the mechanistic biologists that they have solved the mystery of the origin and development of life, even in broad outline " (p. 215).

Furthermore, Sir Peter Medawar, in his introduction to the symposium in 1966 at the Wistar Institute of Anatomy and Biology, Philadelphia, said: " The immediate cause of this conference is a pretty widespread sense of dissatisfaction about what has come to be thought as the accepted evolutionary theory in the English-speaking world—the so-called neo-Darwinian theory " (p. 223).

With this I find myself in sympathy, as neo-Darwinism does not explain the facts where man is concerned. It is inconceivable that all men arose from one stem, when we know that from the earliest times we find races of men in all parts of the world. That they arose along their own lines of assent, as Coon's views lead us to, is far more likely.

In summing up his work on paraspychology he says (p. 240): " One hundred and sixteen years ago Charles Darwin initiated the great schism between science and religion. Until that time, scientists had felt no inhibitions about referring to the Creator in their scientific writings, nor had theologians hesitated to utilise the latest scientific discoveries in their discussions of the nature of God and man. Today no scientific paper would be accepted for publication in any of the ' establishment ' journals if it entertained any mention of God, immortality, or the human soul; for it has become almost universally accepted that science must confine itself to strictly materialistic hypotheses. This restriction is supposed to be an indication of the " objectivity " of science, although why it should be regarded as objective to refuse to think about certain aspects of reality is not at all clear. . . . Today, there are signs that many of the old inhibitions are disappearing. . . . There has been a marked shift of interest away from the physical sciences towards those sciences whose aim is the study or betterment of mankind."

Again he says (p. 241): " Here in Britain, the same spirit of impartial enquiry is demonstrated by Sir Alister Hardy's Religious Experience

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Research Unit, which was established at Oxford University a few years ago."

While, finally (p. 243) he concludes: "Now that parapsychology has broken through the barriers erected by both dogmatic religion and mechanistic science, we may be on the verge of a new revolution in human thought, comparable to those brought about by Copernicus, Newton, Darwin and Einstein."

This is a book worthy of study, and if it can do something to inject into mechanistic science something of this new spirit, it will have served its purpose.

R. GAYRE OF GAYRE

FARMING IN PRE-HISTORY: FROM HUNTER-GATHERER TO FOOD PRODUCER. By Barbara Bender, illustrations by Annabel Rowe and Jan Farquherson John Baker, London, 1975. Pp. 268, five photographs and 36 figures. Price £5.50.

This is a competently written book by Dr Bender, Lecturer at University College, London, and it takes the subject as far as it can at this time. The author rightly complains that "the material is still too meagre, both in quantity and quality" (p. 210). However, in so far as it exists, all that can be is brought out and the book will lay the foundations upon which further works can be erected.

ETHNIC PIGMENTATION: HISTORICAL, PHYSIOLOGICAL AND CLINICAL ASPECTS

By H. P. Wasserman, Excerpta Medica, Amsterdam, and American Elsevier Publishing Company, New York, 1974. Pp. 284: Price Dfl 76.00, U.S. $26.70.

This book is a mine of information and neither physician nor ethnologist can afford to ignore it. Dr Wasserman deals with every aspect of disease and race.

We must take the author to task when in Chapter XIX he says (p. 246) that the comparison of American Negro with Black African is no comparison, because the Cape Coloured should be compared with the American Negro. This is entirely erroneous. The Cape Coloured is from Hottentot stock crossed with White and has very little relationship to the Bantu and Negroes in Africa.

However, the writer, despite this error, does point out that schizophrenia occurs more commonly among American Negroes than among Whites in North Carolina. He argues that the evidence of Faris and Dunham shows that people tend to show a higher incidence of schizophrenia when living in an area predominantly populated by another race—which seems to me to argue strongly for segregation. However, he agrees that the Whites in South Africa are 3 to 1, and so the theory should be revised there. It seems to me to be a condition genetically induced, whatever may be the social conditions (p. 247).

On page 248 Dr Wasserman points out that a Negro has a much higher chance of marriage if he is light coloured. The same thing is true of India. We agree that this may lead to factors of segregation.

The writer tends to "box the compass" when he comes to intelligence in ethnic groups (p. 200). However, he has to admit that "the influence of nutrition on intelligence is, however, controversial." Of course it is.

The book is, as we have already observerd, a mine of information and should not be omitted from the reading of all interested in physical anthropology and ethnology.

R. GAYRE OF GAYRE

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BRONZE AGE CIVILIZATION: THE PHILISTINES AND THE DANITES

By Allen H. Jones. Public Affairs Press, Washington D.C., 1975. Pp. 182. Price $6.00.

This is a good and stimulating work. Professor Cyrus H. Gordon in a foreword says that Professor Allen has shown that Philistia is a key factor in the emergence of both the Greeks and Hebrews.

Professor Allen derives Philistine from Phyle, meaning tribe or tribes, and hystie or Hestia, the great goddess of the hearths of the Mycenaeans. With that origin the view must be taken that they are inseparable from the "Dan" people, or the "water" people who have left their name in places from Egypt to northern Europe. In Greece they were the Danaans. (Professor Waddell long ago had the same view, and relied on a place-name distribution, which, in those days, was laughed at.) We have to remember that a similar name of a tribe (Tuaha de Danaan) appears in Celtic history and dates from the period before the arrival of the Celts. These I have always considered Atlantic folk, and if so they could have been related to the Danaan of Greek and Philistia association. In other words they were pre-Celtic and pre-Aryan, related more to the Hamites than anyone else.

As Professor Gordon has reminded us, Egypt consisted of Upper and Lower, and that the latter was related to the complex of peoples of the Mediterranean.

Personally, I see no difficulty about the Semitic names found among the Hyksos as they had sojourned for some generations in Palestiine, but, as I have shown elsewhere, they were probably, in origin, Indo-European. The trips to Egypt, as Professor Allen points out, were probably due to the Hyksos movements.

Baal of the Hebrews, associated with the Canaanites, became Belus of the Greeks. We may also speculate on a connection with Bel-tane, the god of the Celtic, or rather pre-Celtic, folk of Britain.

The fact of the matter is that the movements of peoples in ancient times were widespread, and even after being overlaid by later invaders still came through. This book makes that quite clear.

Obviously it is not possible to comment on it line by line. Get the book and read it, and much that has been, and is, obscure will become plain. It deserves to be read by a wide public.

R. GAYRE OF GAYRE

CHROMOSOME VARIATIONS IN HUMAN EVOLUTION

Edited by A. J. Boyce. Symposium of the Society for the Study of Human Biology. Taylor and Francis, London, 1975. Pp. 131, numerous illustrations and diagrams. Price £5.00.

This book deals with some of the chromosome changes which accumulate to make for long-term evolutionary changes in the structure of chromosomes, their number, and the arrangement of genetic information within the chromosomes. There are contributions by M. Bolrow, J. de Grouchy, C. Turleau, G. Finaz, M. Roubin, K. W. Jones, W. F. Bodmer, H. J. Evans, E. Alderman, M. R. Creasy and S. G. Ratcliffe.

One of the most interesting papers is "Chromosome Evolution of Man and the Primates" by Grouchy, Turleau, Finaz and Roubin. One observation now confirmed in the chimpanzee "shows that fusion between acrocentric and pericentric inversions appear to be the major agents of chromosome evolution. One fusion occurred in the human lineage, thus reducing the chromosome number from 48 in the anthropoid apes to 46 in man." (p. 35).

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CHANGE AND PERSISTENCE in THAI SOCIETY: ESSAYS IN HONOUR OF LAURISTON SHARP

Edited by G. William Skinner and A. Thomas Kirsch. Cornell University Press, Ithaca and London, 1975. Pp. 386, four maps, seven figures. Price £11.40.

Professor G. William Skinner is Professor of Anthropology at Stanford University and Thomas Kirsch is Associate Professor of Anthropology and Asian Studies at Cornell University. This book consists of studies of the Thai people with the various variants from different parts of the country. It is dedicated to Professor Lauriston Sharp, Professor Emeritus of Anthropology at Cornell University.

THE MOUNTAINWAY OF THE NAVAJO

By Leland C. Wyman. University of Arizona Press, Tucson, Arizona, 1975. Pp. 271, 34 illustrations, five tables. Price $14.50.

Leland Wyman is a leading specialist on Navajo religion, and this book is to do with the Navajo and their religion, the ceremonial of the Navajo, their sandpaintings, the mythology of the Mountainway, the geography of the Mountainway, the Female Mount-Top-way and "Raised by the Owl."

SANGHA AND STATE IN BURMA: A STUDY OF MONASTIC SECTARIANISM AND LEADERSHIP

By E. Michael Mendelson. Edited by John P. Ferguson. Cornell University Press, Ithaca and London, 1975. Pp. 400. Price £12.70.

This is a lengthy account of the Burmese Sangha, one of the five monastic orders in Theravada Buddhism, its relationship to the culture of Burma and in political life. It traces religious events back to the Middle Ages. The Sangha in its relation to nationalism, as well as during royal times in the last century, and its rôle in the independent state of today is dealt with.

RECIPROCITY AND THE POSITION OF WOMEN: ANTHROPOLOGICAL PAPERS

By J. van Baab. Van Gorcum, Assen, Netherlands, 1975. Pp. 128. Price Dfl 14.90.

This book sets out to demonstrate that the matrilineate does not arise from matrilocal marriage but rather from virilocal. It also shows (as is, in fact, clear from a study of many societies—only not least our own) that upward social mobility is easier for women than men.

This book consists of three papers, a concise review of issues in modern anthropology; the specific disbalance of reciprocity in the position of women; and the female in primitive society.

THE HIDDEN FRONTIER

By John W. Cole and Eric R. Wolfe. Academic Press Inc., New York, 1974. Pp. 348, numerous illustrations and diagrams. Price £5.90 ($12.50).

This is a substantial work dealing with the ethnology and ecology of an Alpine valley. It goes thoroughly into this question, not neglecting the Middle Ages. It compares two adjacent villages, one German and the other Romance speaking. The conclusion is that "ethnicity" is primarily political. As no anthropological data is given it may well be that the differences are due to ethnology. Ethnic is in any case used to record the linguistic and not ethnic differences.

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